On Board Diagnostic (OBD) - New Beetle (Instrument Cluster, Data Bus & Anti-theft Immobilizer)

INSTRUMENT CLUSTER UP TO 06.99, ON BOARD DIAGNOSTIC (OBD)

GENERAL INFORMATION

The instrument cluster is controlled by an internal microprocessor with On Board Diagnostic (OBD) capability. If malfunctions occur in monitored sensors and components, Diagnostic Trouble Codes (DTC) will be stored in memory together with an indication of malfunction type. A maximum of 4 DTCs can be stored simultaneously.

Sporadic malfunctions (indicated in the readout by "SP") are automatically cancelled if not repeated in the next 50 engine start cycles.

For OBD purposes, the instrument cluster counts one start cycle whenever the ignition is switched on longer than 5 min. and a minimum speed of 30 km/h (18.5 mp/h) is exceeded.

Before performing any troubleshooting or inspection, always begin by checking for DTCs using the OBD program. DTCs stored in memory are retrieved/checked with either the VAG 1551/1552 Scan Tool (ST) or VAS 5051 Vehicle Diagnostic Tester.

NOTE: The following description and illustrations deal specifically with the VAG 1551 scan tool. VAG 1552 and VAS 5051 procedures are similar.

Additional information:

- Complaint/symptom based Technical Bulletins ("Service Fixes"): Check for Technical Bulletins.
- Instrument cluster, see **INSTRUMENTS** .

Notes on exchanging instrument cluster

- Do not disassemble instrument cluster.
- When replacing an instrument cluster is necessary, follow normal exchange part procedures.
- Complete report form and return together with instrument cluster.
- Use original packaging from new cluster when returning items.
- Replacement instrument clusters must first be coded according to vehicle market version and equipment level variables using VAG 1551 Scan Tool (ST)
- Odometer reading must also be adapted to the replacement instrument cluster. See **ODOMETER READING UP TO 06.98 MODELS, ADAPTATION** .

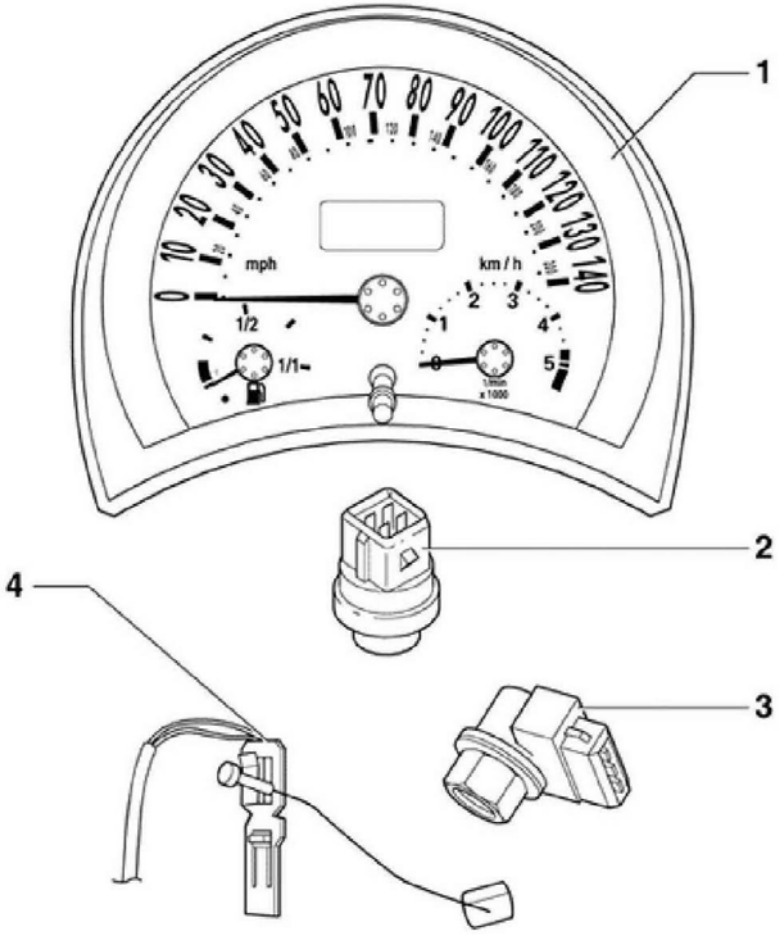
ELECTRICAL & ELECTRONIC COMPONENTS, LOCATIONS

CAUTION: Before beginning repairs on the electrical system:

- **Obtain the anti-theft radio security code.**
- **Switch off all electrical consumers.**
- **Switch ignition off and remove ignition key.**
- **Disconnect negative (-) battery terminal.**
- **When disconnecting and reconnecting battery terminals, observe all applicable Notes and torque specifications, as well as instructions on performing OBD program and electrical system function checks as specified.**

NOTE: The following list refers to items in Fig. 1 .

1. **Instrument cluster -K-**
   - Monitored by OBD
2. **Engine Coolant Temperature (ECT) sensor -G2-**
   - Location, See **Fig. 2**
   - Monitored by OBD
3. **Speedometer Vehicle Speed Sensor (VSS) -G22-**
   - Location, See **Fig. 3**
   - Monitored by OBD
4. **Sender for fuel gauge -G-**
   - Location, See **Fig. 4**
   - Monitored by OBD



1 - Instrument cluster - K-

2 - Engine Coolant Temperature (ECT) sensor -G2-

3 - Speedometer Vehicle Speed Sensor (VSS) -G22-

4 - Sender for fuel gauge -G-

Fig. 1: Identifying Instrument Cluster Electrical & Electronic Components - Up To 06.99
Courtesy of VOLKSWAGEN OF AMERICA, INC.

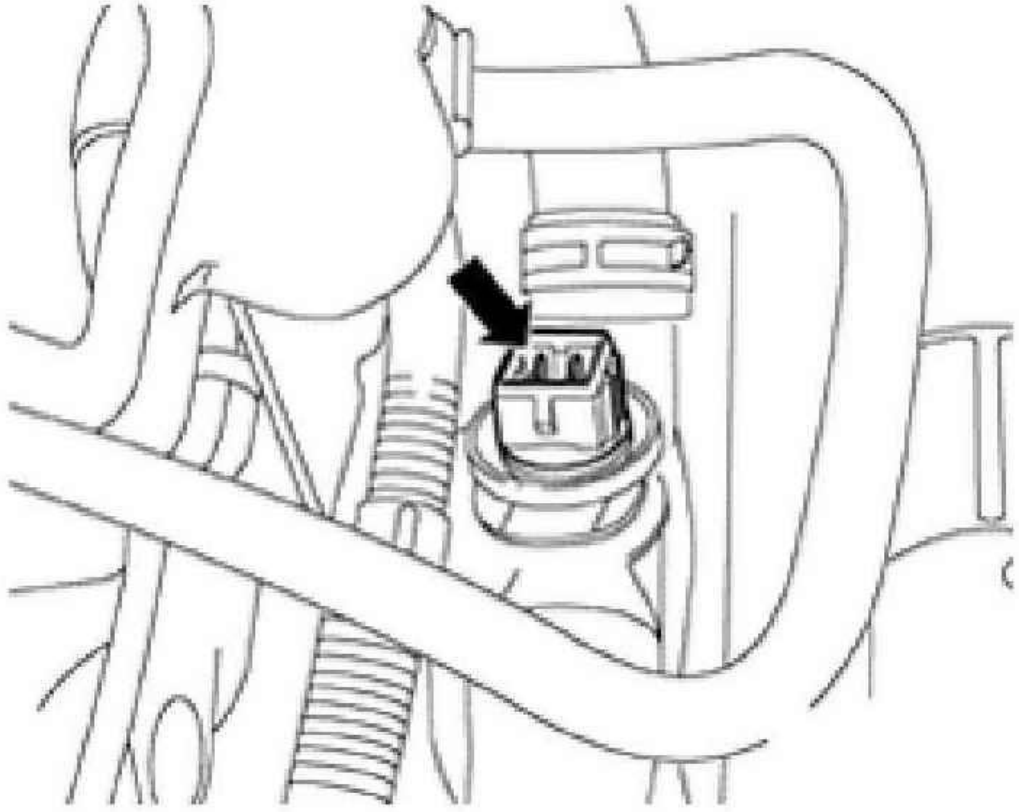
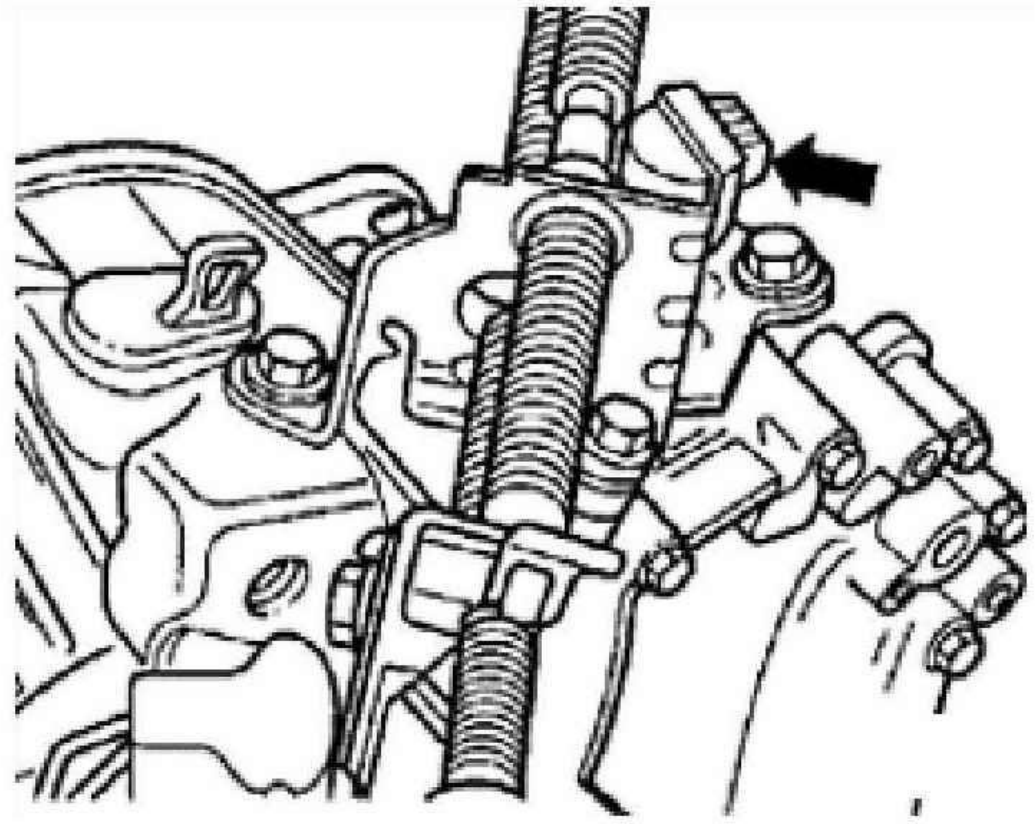


Fig. 2: Identifying Engine Coolant Temperature (ECT) Sensor
Courtesy of VOLKSWAGEN OF AMERICA, INC.

The engine coolant temperature sensor is installed in the coolant return (arrow), located between the cylinder head and the radiator.



G03259902

Fig. 3: Identifying Speedometer Vehicle Speed Sensor (VSS)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

The speedometer vehicle speed sensor (arrow) is located at the rear of the transmission. See **Fig. 3** .

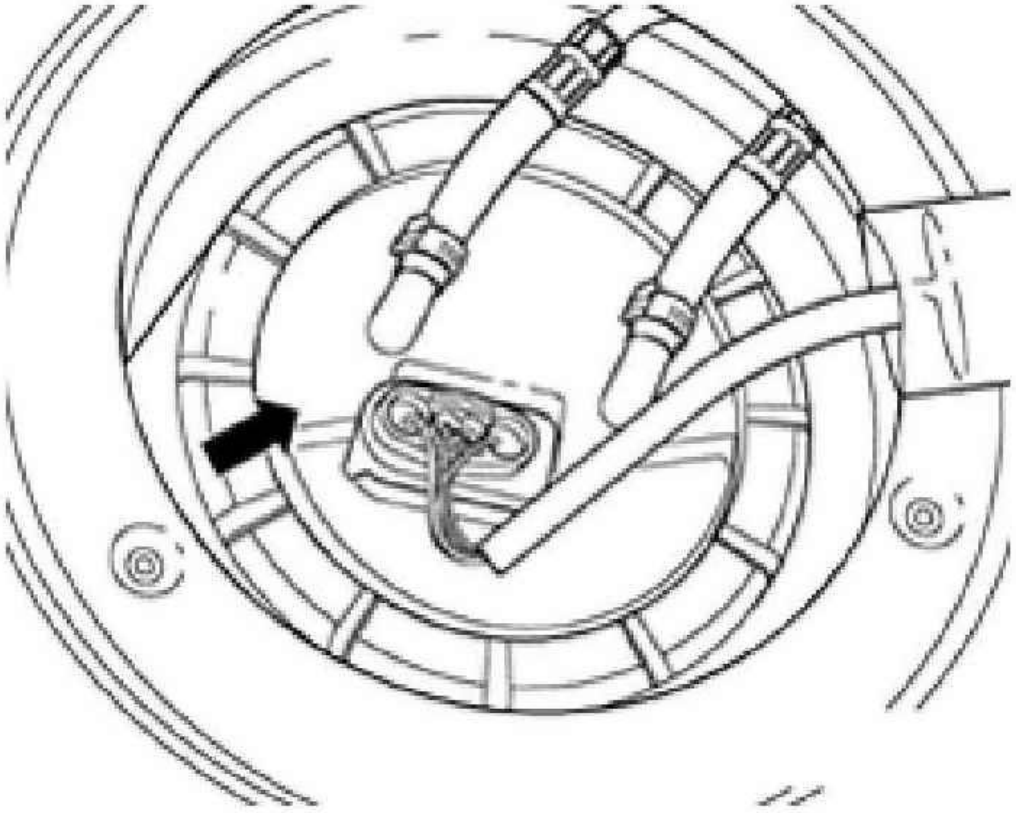


Fig. 4: Identifying Fuel Level Sensor
Courtesy of VOLKSWAGEN OF AMERICA, INC.

The fuel level sensor is integrated into fuel pump module (arrow). See **Fig. 4** .

Both components are located in the fuel tank and are accessible under the rear seat on the right side.

VAG 1551 SCAN TOOL (ST), CONNECTING, SELECTING FUNCTIONS & CHECKING CONTROL MODULE VERSIONS

Special tools, testers, and auxiliary items

- VAG 1551 or VAG 1552 Scan Tool (ST)
- Optional: VAS 5051 Vehicle Diagnostic Tester

Fig. 5: Identifying VAG 1551 Or VAG 1552 Scan Tool (ST)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

- VAG 1551/3 or 1551/3B adapter cable

Fig. 6: Identifying VAG 1551/3 Or 1551/3B Adapter Cable
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Prerequisites:

- All fuses OK according to wiring diagram.
- Battery (B+) voltage at least 9 Volts.

NOTE:

- **VAG 1552 Scan Tool (ST) may be used instead of the VAG 1551 Scan Tool (ST), however a print-out is not possible.**
- **The following procedure and display references pertain only to VAG 1551 Scan Tool (ST).**

Connecting

With ignition switched off, connect VAG 1551 Scan Tool (ST) with adapter cable 1551/3 to the Data Link Connector (DLC) located above ashtray

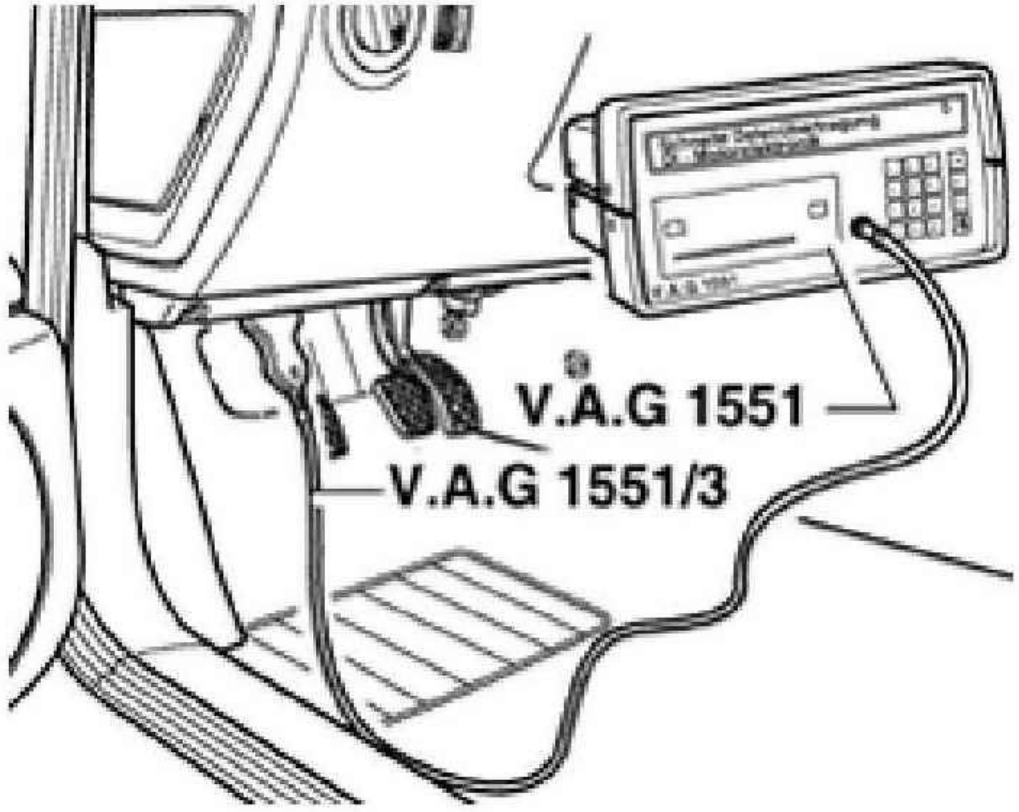


Fig. 7: Connecting VAG 1551 Scan Tool To Data Link Connector
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

* Is displayed alternately. See **Fig. 8** .

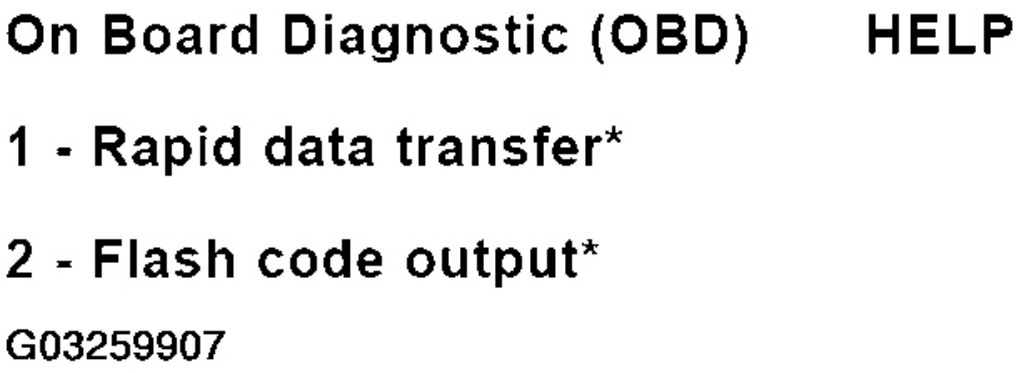


Fig. 8: VAG 1551 Scan Tool Display - Connecting VAG 1551 Scan Tool (1 Of 9)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

NOTE:

- **If display remains blank, check Scan Tool (ST) voltage supply according to wiring diagram.**

  See SYSTEM WIRING DIAGRAMS.

- **Additional operating instructions can be called up by pressing HELP button.**
- **The --> button is used to advance through program sequence.**
- **In operating mode 1 "Rapid data transfer," function 00 "Automatic test sequence" can be carried out. The DTC memory of all control modules with OBD capability are checked automatically.**

- Switch on ignition.
- Switch on printer with the Print button (indicator lamp in button lights up).
- Press button 1 for "Rapid data transfer" mode.

Indicated on display:

- Press buttons -1- and -7- to select instrument cluster address word 17.

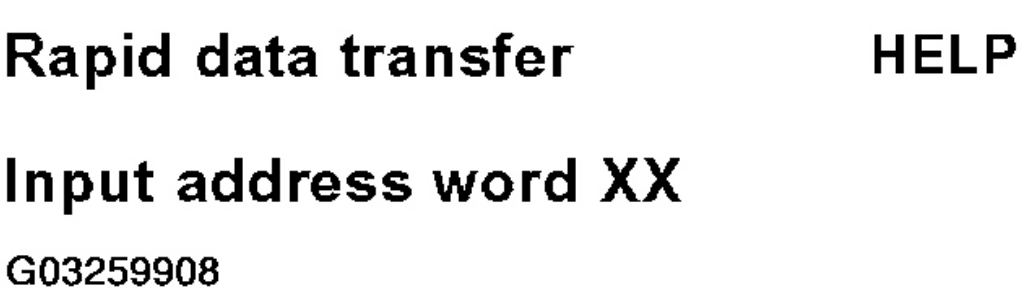


Fig. 9: VAG 1551 Scan Tool Display - Connecting VAG 1551 Scan Tool (2 Of 9)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

- Press -Q- button to confirm input.

Fig. 10: VAG 1551 Scan Tool Display - Connecting VAG 1551 Scan Tool (3 Of 9)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

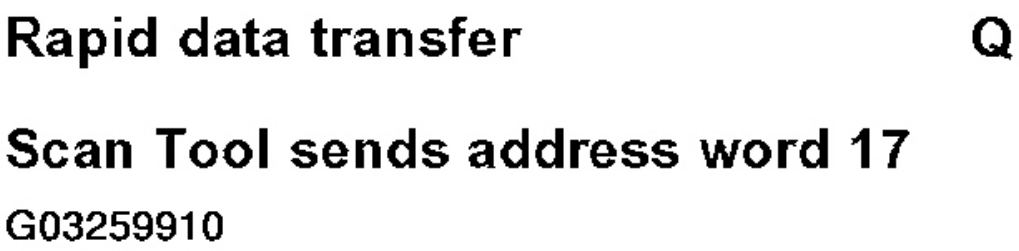


Fig. 11: VAG 1551 Scan Tool Display - Connecting VAG 1551 Scan Tool (4 Of 9)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Control module version, checking

Indicated on display (example only): Readout, top line

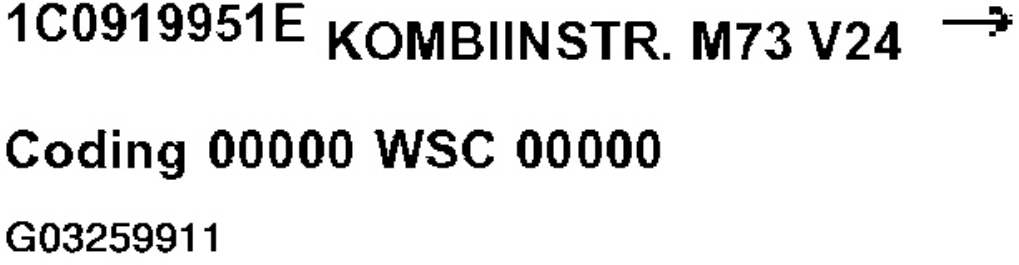


Fig. 12: VAG 1551 Scan Tool Display - Connecting VAG 1551 Scan Tool (5 Of 9)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

- C0 919 951 E: Part No. of control module
- KOMBIINSTR: Component designation
- M73: Manufacturer's code (example: Magneti Marelli)
- V24: Software version installed in instrument cluster

Readout, bottom line

- Coding 00000 (Depends on engine, transmission and brake system.): Coding of instrument cluster

- WSC 00000 (Will be automatically stored in the control module when entering the system.): Dealership number

CAUTION: Part numbers are for reference only. Always check with your Parts Department for the latest parts information.

- Press --> button.

Indicated on display

Fig. 13: VAG 1551 Scan Tool Display - Connecting VAG 1551 Scan Tool (6 Of 9)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

By pressing the HELP button, a list of possible malfunction causes is printed out.

- After repairing malfunctions, re-enter address word 17 for instrument cluster and confirm with -Q- button.

Indicated on display (example only)

- Press --> button.

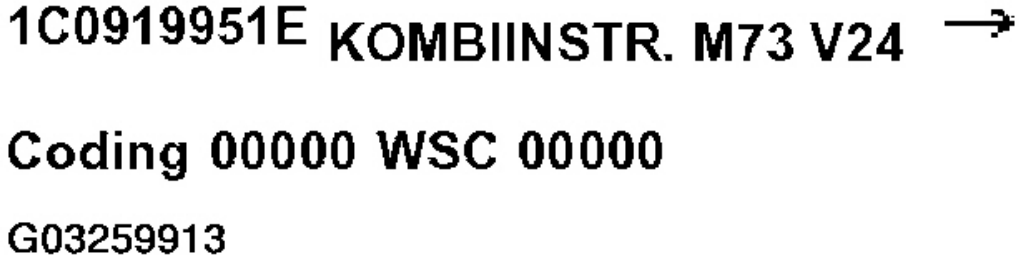


Fig. 14: VAG 1551 Scan Tool Display - Connecting VAG 1551 Scan Tool (7 Of 9)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

- Press "HELP" button to print out a list of possible malfunction causes.

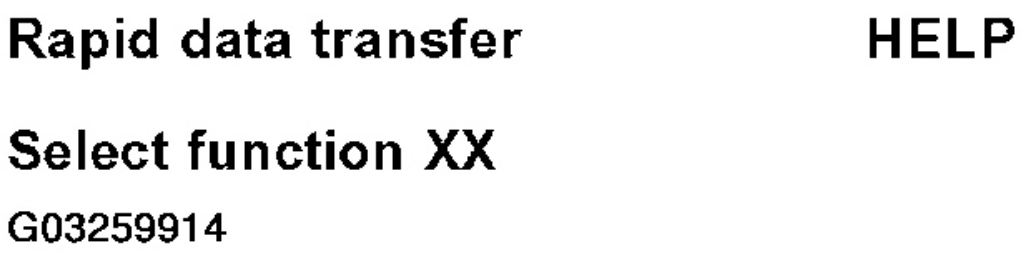


Fig. 15: VAG 1551 Scan Tool Display - Connecting VAG 1551 Scan Tool (8 Of 9)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

List of available functions

LIST OF AVAILABLE FUNCTIONS (UP TO 06.99)

Function No.	Function Description	See
01 -	Check control module version	VAG 1551 SCAN TOOL (ST), CONNECTING, SELECTING FUNCTIONS & CHECKING CONTROL MODULE VERSIONS .
02 -	Check Diagnostic Trouble Code (DTC) memory	DIAGNOSTIC TROUBLE CODE (DTC) MEMORY, CHECKING (FUNCTION 02)
03 -	Output Diagnostic Test Mode (DTM)	OUTPUT DIAGNOSTIC TEST MODE (DTM) (FUNCTION 03)
05 -	Erase DTC memory	DIAGNOSTIC TROUBLE CODE (DTC) MEMORY, ERASING (FUNCTION 05)
06 -	End output	END OUTPUT (FUNCTION 06)
07 -	Code control module	INSTRUMENT CLUSTER, CODING (FUNCTION 07)
08 -	Read measuring value block	READ MEASURING VALUE BLOCK (FUNCTION 08)
10 -	Adaptation	ADAPTATION (FUNCTION 10)

NOTE:

- **Press HELP button to print out a complete list of available functions. This**

list indicates function capability of VAG 1551 Scan Tool (ST) only, and does not necessarily reflect function capability of vehicle systems equipped with OBD. For instrument cluster address word 17, do not attempt to select functions other than those listed above.

- **After function is completed and forwarded with --> button, VAG 1551 Scan Tool (ST) returns to following start position:**

Indicated on display (select function):

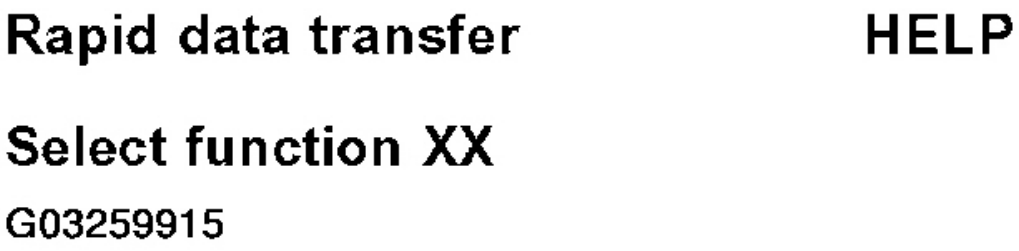


Fig. 16: VAG 1551 Scan Tool Display - Connecting VAG 1551 Scan Tool (9 Of 9)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

DIAGNOSTIC TROUBLE CODE (DTC) MEMORY, CHECKING (FUNCTION 02)

NOTE: The displayed DTC information is updated only when initiating OBD or with "Erase DTC Memory" function 05.

- Switch printer on by pressing PRINT button (indicator lamp in button lights up).

Indicated on display

- Press buttons -0- and -2- to select "Check DTC Memory" function 02.

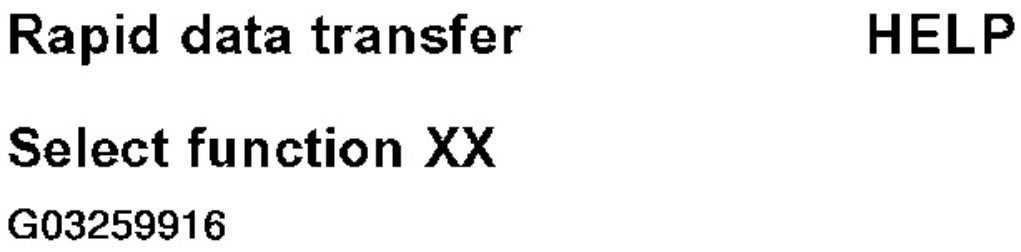


Fig. 17: VAG 1551 Scan Tool Display - Diagnostic Trouble Code Memory, Up To 06.99 (1 Of 5)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

- Press -Q- button to confirm input.

Fig. 18: VAG 1551 Scan Tool Display - Diagnostic Trouble Code Memory, Up To 06.99 (2 Of 5)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

The number of stored DTCs appears on the display.

Stored DTCs are displayed and printed out one after another.

- Check print-out against DTC table and repair all malfunctions as necessary. See **DIAGNOSTIC TROUBLE CODE (DTC) TABLE** .

Fig. 19: VAG 1551 Scan Tool Display - Diagnostic Trouble Code Memory, Up To 06.99 (3 Of 5)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

If "No DTC recognized" is displayed the program will return to the initial position after pressing --> button.

Fig. 20: VAG 1551 Scan Tool Display - Diagnostic Trouble Code Memory, Up To 06.99 (4 Of 5)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

If something else is displayed:

See Scan Tool operating instructions

- End output (function 06). See **END OUTPUT (FUNCTION 06)** .
- Switch ignition off.
- Disconnect Data Link Connector (DLC).

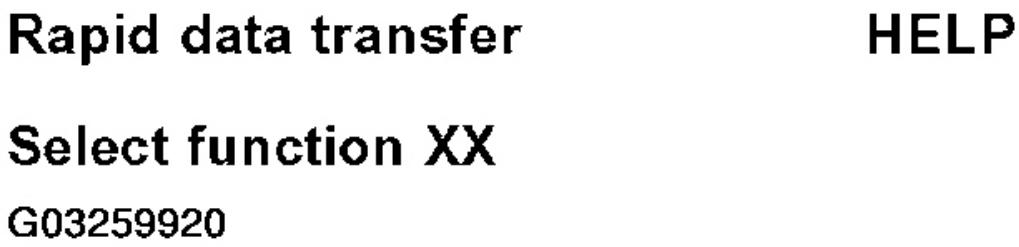


Fig. 21: VAG 1551 Scan Tool Display - Diagnostic Trouble Code Memory, Up To 06.99 (5 Of 5)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

DIAGNOSTIC TROUBLE CODE (DTC) TABLE

NOTE:

- **The following table lists all malfunctions, with the corresponding 5 digit code numbers, that can be recognized by control module with indicator unit in instrument cluster insert -J285- and printed out by the VAG 1551 Scan Tool (ST).**
- **If malfunctions do not occur regularly, these are displayed as occurring sporadically ("SP").**
- **DTC codes appear only on print-out.**
- **Before replacing components, check the wiring and connections to these components as well as ground connections, according to wiring diagram.**
- **When repair has been carried out, the Diagnostic Trouble Code (DTC) memory must always be erased and checked again with VAG 1551 Scan Tool (ST).**
- **If there is a specific complaint and no malfunctions are recognized after checking Diagnostic Trouble Code (DTC) memory, carry out function 03 OUTPUT DIAGNOSTIC TEST MODE (DTM) (FUNCTION 03) or function 08 READ MEASURING VALUE BLOCK (FUNCTION 08) .**

DIAGNOSTIC TROUBLE CODES (UP TO 06.99)

VAG 1551 print out	Possible cause	Possible effects	Corrective action
00771* Sender for fuel gauge - G • Open/short circuit to B+ • Short circuit to	• Open circuit or short circuit between -G- and instrument cluster • G- malfunctioning	• Fuel gauge display shows reserve 0 ("empty") and fuel reserve warning lamp lights up	• Check for open or short circuit in wiring using wiring diagram. • Replace sender for fuel gauge - G-.

Ground			
01039 Engine Coolant Temperature (ECT_ Sensor -G2 • Short circuit to Ground	• Open circuit or short circuit between -G2- and instrument cluster • ECT sensor-G2- malfunctioning	• Coolant temperature gauge needle on left stop	• Check for short circuit in wiring using wiring diagram. • Replace ECT sensor -G2-.
01086 Speedometer Vehicle Speed Sensor (VSS) - G22 • Signal too large	• G22- malfunctioning	• Incorrect speedometer display	• Replace VSS sensor -G22-
65535 Control Module • Malfunctioning		• Instrument cluster malfunctioning	• Replace instrument cluster.

OUTPUT DIAGNOSTIC TEST MODE (DTM) (FUNCTION 03)

The output Diagnostic Test Mode (DTM) is part of the electrical check. The following components can be checked via the output diagnostic test mode:

- Speedometer
- Tachometer
- Fuel gauge
- Odometer display
- Oil pressure warning buzzer
- Fuel reserve warning light
- Coolant temperature/engine coolant level indicator warning light
- Oil pressure warning light
- Dual brake circuit and parking brake system warning light
- All warning lights for the vehicle optional equipment

- If there is a malfunction during output DTM, replace instrument cluster.
- If no malfunction is identified during output DTM, check wiring and connections to instrument cluster.

Output Diagnostic Test Mode (DTM), initiating

NOTE:

- **Output Diagnostic Test Mode (DTM) cannot be initiated or will be interrupted if engine is running or vehicle is moving,**
- **Use -C- button to exit test sequence at any time.**

- Connect VAG1551 scan tool, select "Rapid data transfer" operating mode 1, switch ignition on, and input "Instrument Cluster" address word 17.

Indicated on display

- Press buttons -0- and -3- to select function 03 "Output Diagnostic Test Mode".

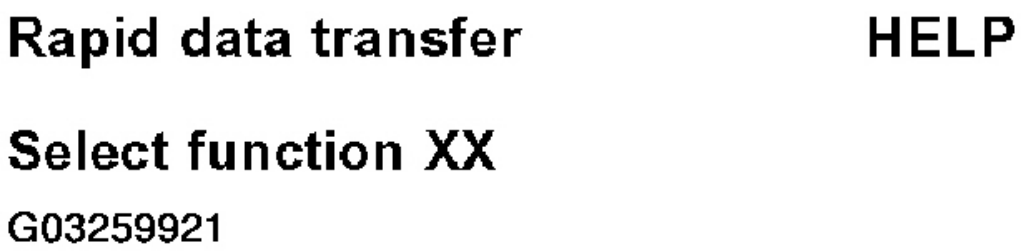


Fig. 22: VAG 1551 Scan Tool Display - Output Diagnostic Test Mode, Up To 06.99 (1 Of 12)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

- Press -Q- button to confirm input.

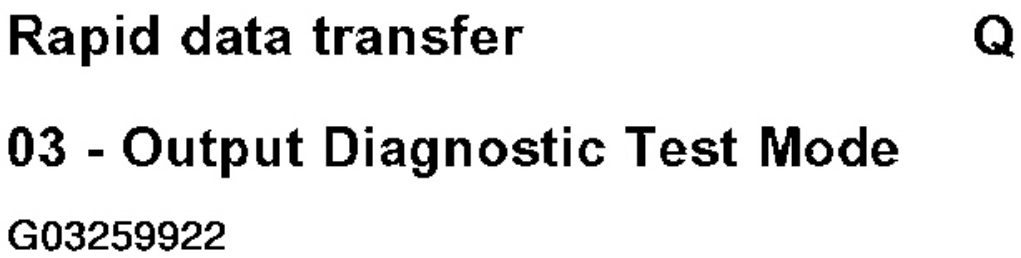


Fig. 23: VAG 1551 Scan Tool Display - Output Diagnostic Test Mode, Up To 06.99 (2 Of 12)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

No indication on all displays and all warning lights to be checked are unlit.

Indicated on display

After pressing --> button, the following instrumental functional checks will occur simultaneously:

- Tachometer needle moves over complete display range
- Speedometer needle moves over complete display range
- Fuel gauge needle moves over complete display range

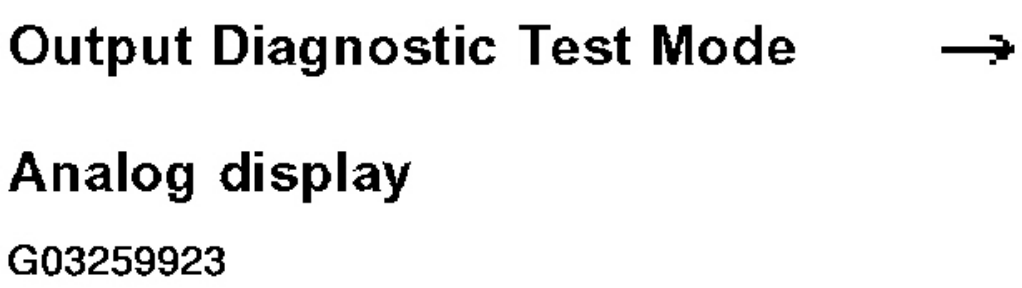


Fig. 24: VAG 1551 Scan Tool Display - Output Diagnostic Test Mode, Up To 06.99 (3 Of 12)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

After checking movement over display ranges, the following constant values are displayed:

- Tachometer: 3000 RPM
- Speedometer: 100 km/h (65 mph)
- Fuel gauge: 1/2
    - Press --> button.

      The analog displays again indicating all actual values.

Indicated on display

The following warning lights light up continuously:

- Coolant temperature/engine coolant level indicator
- Dual brake circuit and parking brake system
- Oil pressure
- Fuel reserve
    - Press --> button.

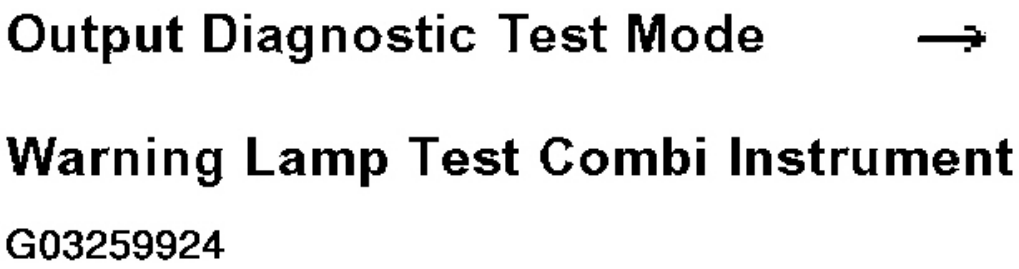


Fig. 25: VAG 1551 Scan Tool Display - Output Diagnostic Test Mode, Up To 06.99 (4 Of 12)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

Seat belt warning light -K19- lights

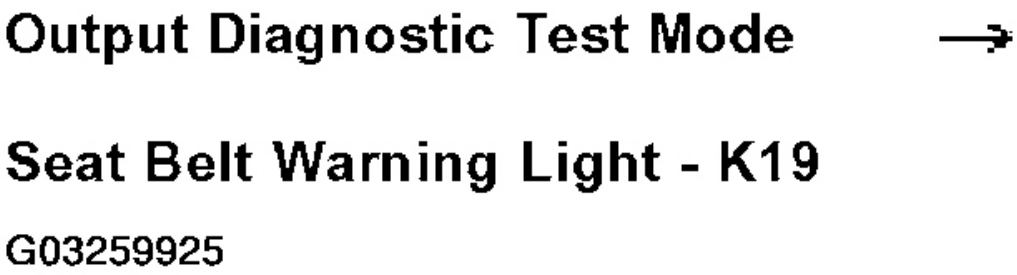


Fig. 26: VAG 1551 Scan Tool Display - Output Diagnostic Test Mode, Up To 06.99 (5 Of 12)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

Oil pressure warning buzzer is activated intermittently

- Press --> button.

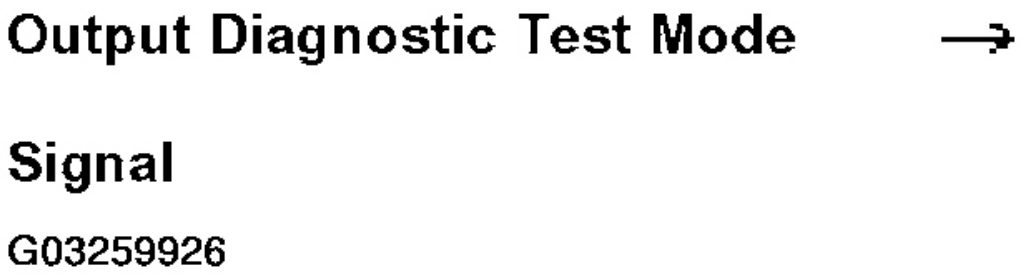


Fig. 27: VAG 1551 Scan Tool Display - Output Diagnostic Test Mode, Up To 06.99 (6 Of 12)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

All liquid crystal segments in speedometer display are activated and become visible.

- Press --> button.

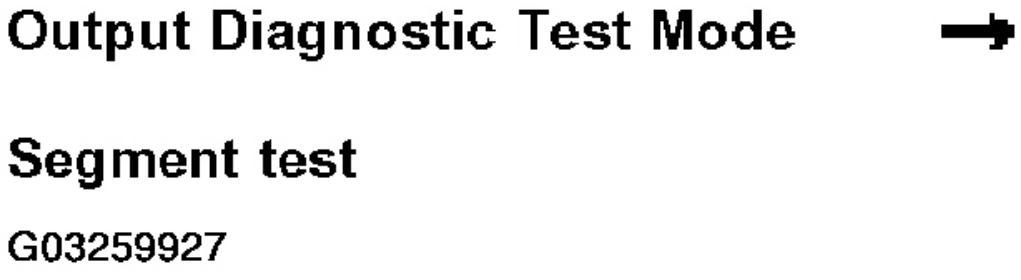


Fig. 28: VAG 1551 Scan Tool Display - Output Diagnostic Test Mode, Up To 06.99 (7 Of 12)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

Coolant temperature/engine coolant level indicator warning light is activated.

Safety function (high coolant temperature cut-out for the A/C clutch) is activated approx. 5 seconds later.

- Press --> button.

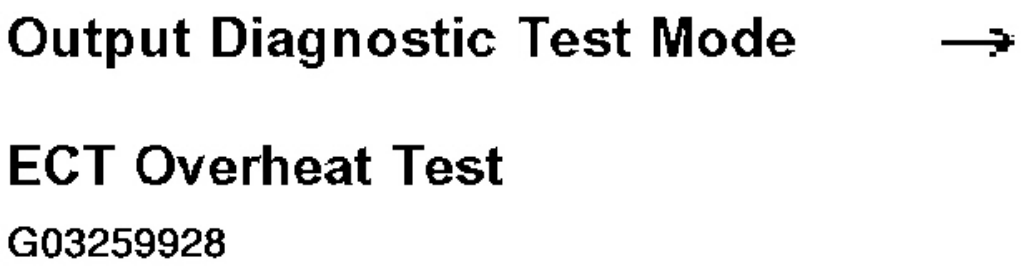


Fig. 29: VAG 1551 Scan Tool Display - Output Diagnostic Test Mode, Up To 06.99 (8 Of 12)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display for instrument clusters with manufacturer code M73:

- Press --> button.

  All actual values are displayed again.

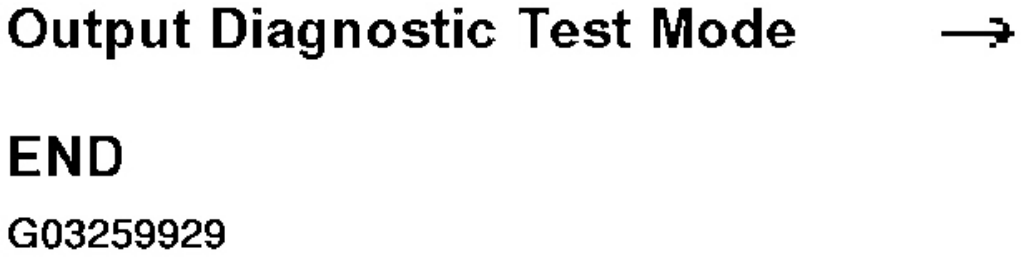


Fig. 30: VAG 1551 Scan Tool Display - Output Diagnostic Test Mode, Up To 06.99 (9 Of 12)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

- Press buttons -0- and -6- to select function "End Output" function 06.

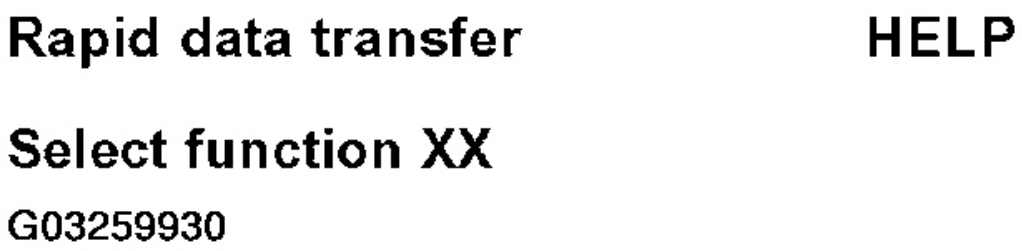


Fig. 31: VAG 1551 Scan Tool Display - Output Diagnostic Test Mode, Up To 06.99 (10 Of 12)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

- Press -Q- button to confirm input.

Fig. 32: VAG 1551 Scan Tool Display - Output Diagnostic Test Mode, Up To 06.99 (11 Of 12)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

The scan tool returns to the start of the program sequence.

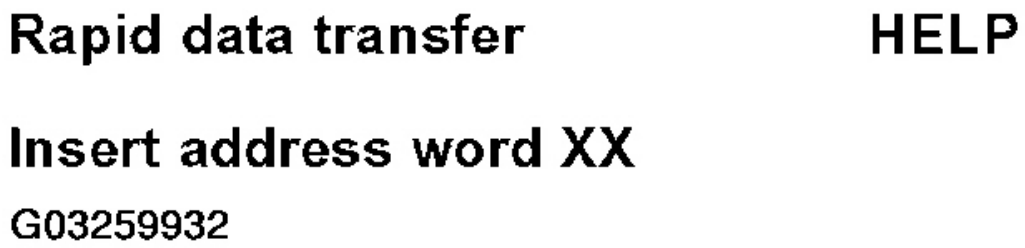


Fig. 33: VAG 1551 Scan Tool Display - Output Diagnostic Test Mode, Up To 06.99 (12 Of 12)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

DIAGNOSTIC TROUBLE CODE (DTC) MEMORY, ERASING (FUNCTION 05)

NOTE: After erasing DTC memory its contents will automatically be indicated. If DTC memory cannot be erased, check DTC memory again and repair malfunctions.

Requirement

- DTC memory checked, See **DIAGNOSTIC TROUBLE CODE (DTC) MEMORY, CHECKING (FUNCTION 02)** .
- All malfunctions repaired

After DTC memory has been successfully checked.

Indicated on display

- Press buttons -0- and -5- to select "Erase DTC Memory" function 05.

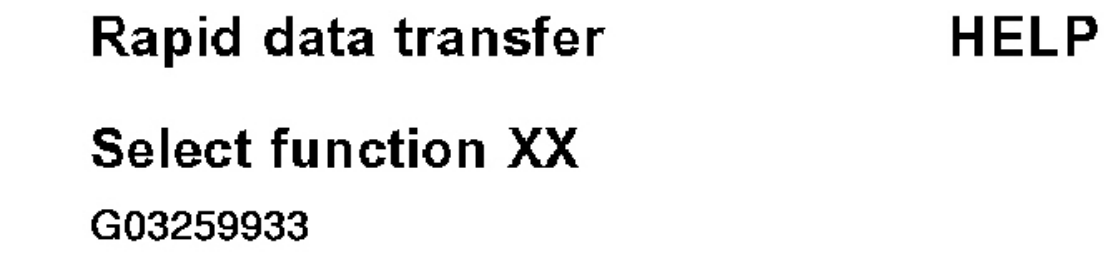


Fig. 34: VAG 1551 Scan Tool Display - Diagnostic Trouble Code Memory Erasing, Up To 06.99 (1 Of 6)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

- Press -Q- button to confirm input.

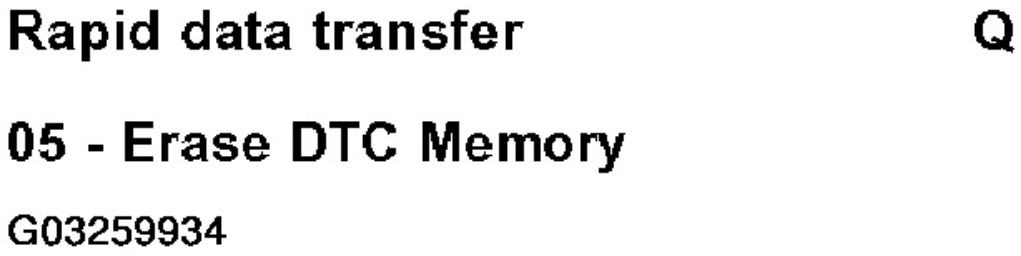


Fig. 35: VAG 1551 Scan Tool Display - Diagnostic Trouble Code Memory Erasing, Up To 06.99 (2 Of 6)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

DTC memory is now erased.

- Press --> button.

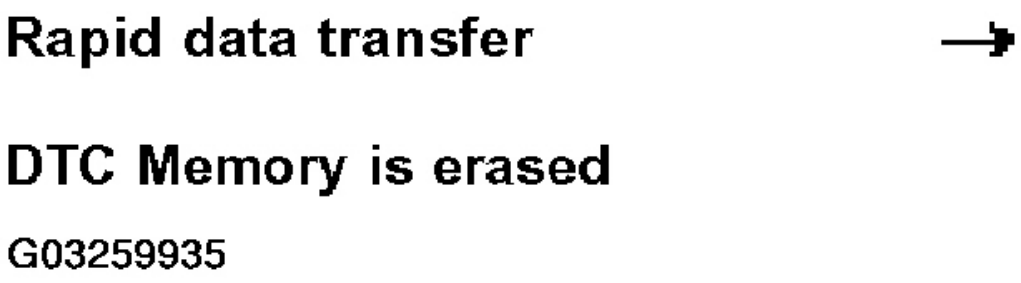


Fig. 36: VAG 1551 Scan Tool Display - Diagnostic Trouble Code Memory Erasing, Up To 06.99 (3

Of 6)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display Notes:

NOTE:

- **If "DTC Memory is not interrogated" appears on the display, the test sequence has not been performed correctly.**

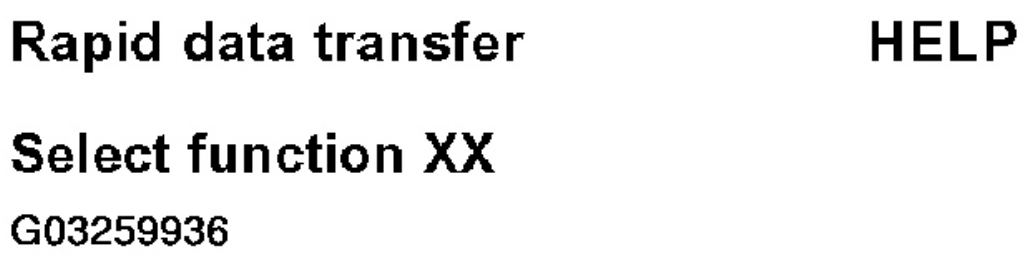


Fig. 37: VAG 1551 Scan Tool Display - Diagnostic Trouble Code Memory Erasing, Up To 06.99 (4 Of 6)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Fig. 38: VAG 1551 Scan Tool Display - Diagnostic Trouble Code Memory Erasing, Up To 06.99 (5 Of 6)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

- **If this appears on the display, the test sequence has not been performed correctly.**

- **Follow the test sequence exactly, i.e. first check DTC memory, repair malfunctions if necessary, then erase DTC memory.**

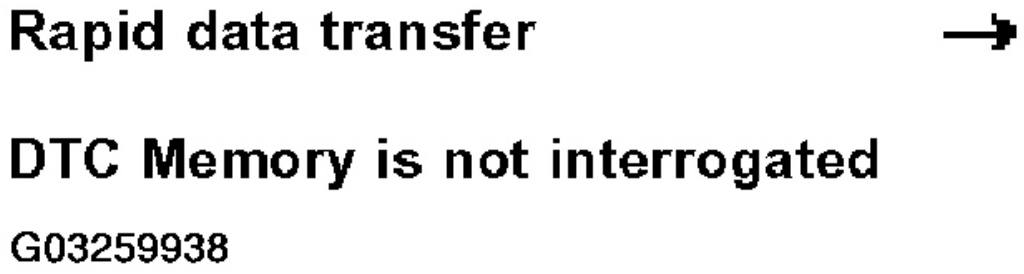


Fig. 39: VAG 1551 Scan Tool Display - Diagnostic Trouble Code Memory Erasing, Up To 06.99 (6 Of 6)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

END OUTPUT (FUNCTION 06)

- Press buttons -0- and -6- to select function "End Output" function 06.

Indicated on display

- Press -Q- button to confirm input.

Fig. 40: VAG 1551 Scan Tool Display - End Output, Up To 06.99 (1 Of 2)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

- Switch ignition off.
- Disconnect Data Link Connector (DLC).

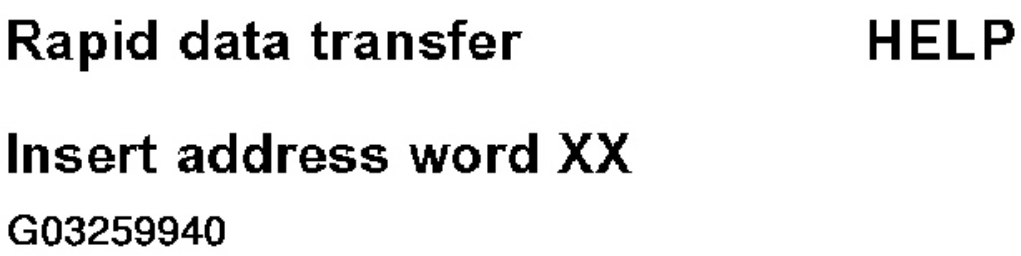


Fig. 41: VAG 1551 Scan Tool Display - End Output, Up To 06.99 (2 Of 2)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

INSTRUMENT CLUSTER, CODING (FUNCTION 07)

Use this function to code the control module with indicator unit in instrument cluster -J285- with the following information:

- Available equipment
- Market version
- Number of cylinders
- Code for distance impulse number ("K"-number)
    - Press buttons -0- and -7- to select function 07 "Code Control Module".
    - Press -Q- button to confirm input.

Indicated on display

- Confirm vehicle applicable market, model and equipment particulars, determine and enter code number from code table. See **INSTRUMENT CLUSTER CODE TABLE (UP TO 06.99)** . .

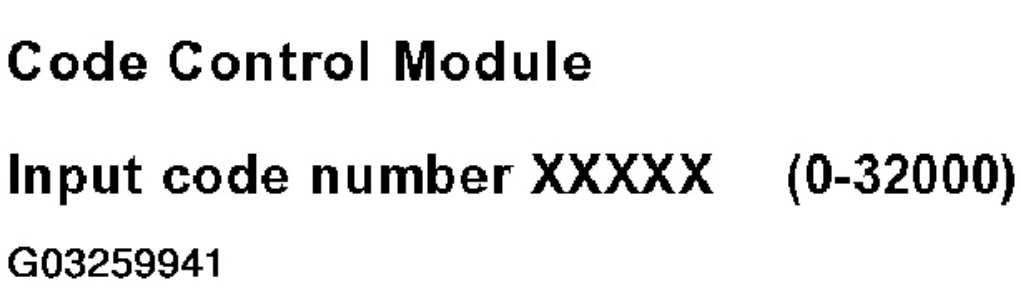


Fig. 42: VAG 1551 Scan Tool Display - Instrument Cluster Coding, Up To 06.99 (1 Of 6)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Example:

03 Code for available equipment

2 USA

4 4-cylinder

2 Code for distance impulse number ("K" number)

INSTRUMENT CLUSTER CODE

Code	Place In Code	Explanation
XX	1st & 2nd Digits	Available equipment(1)
01	1st & 2nd Digits	Brake pad wear indicator, active
02	1st & 2nd Digits	Seat belt warning, active
X	3rd Digit	Market version
2	3rd Digit	USA (US)
3	3rd Digit	Canada (CDN)
X	4th Digit	Number of cylinders (4 = 4-Cylinder)
X	5th Digit	Code number for travel impulse (K number). Example:2 - 3538

(1) If more than one type of optional equipment is to be entered, then the code numbers must be added together. Example, Brake pad wear indicator and seat belt warning active: Available equipment coding 01 + 02 = 03.

Indicated on display (example only)

- Press -Q- button to confirm input.

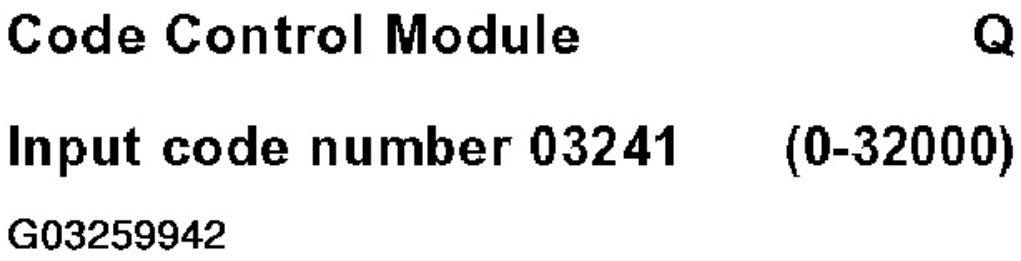


Fig. 43: VAG 1551 Scan Tool Display - Instrument Cluster Coding (2 Of 6)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display (example only)

- Press --> button.

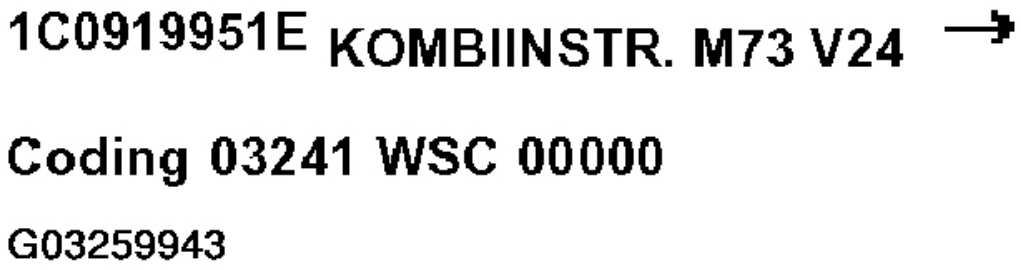


Fig. 44: VAG 1551 Scan Tool Display - Instrument Cluster Coding, Up To 06.99 (3 Of 6)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

End output:

- Press buttons -0- and -6- to select "End Output" function 06.

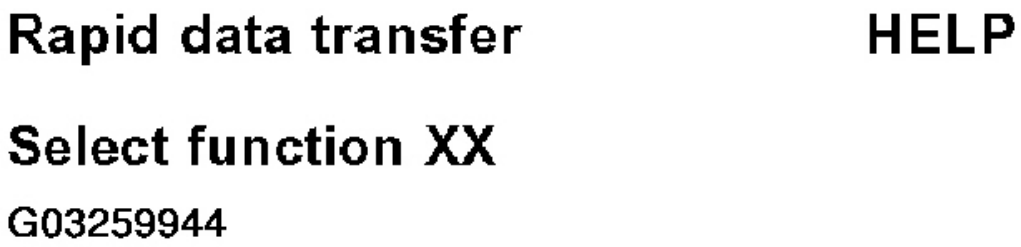


Fig. 45: VAG 1551 Scan Tool Display - Instrument Cluster Coding, Up To 06.99 (4 Of 6)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

- Press -Q- button to confirm input.

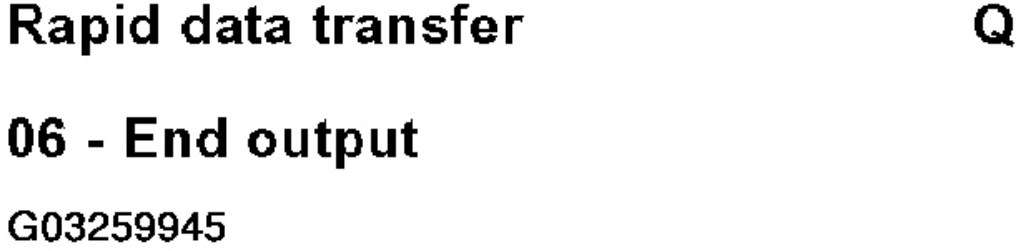


Fig. 46: VAG 1551 Scan Tool Display - Instrument Cluster Coding, Up To 06.99 (5 Of 6)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

The scan tool returns to the start of the program sequence.

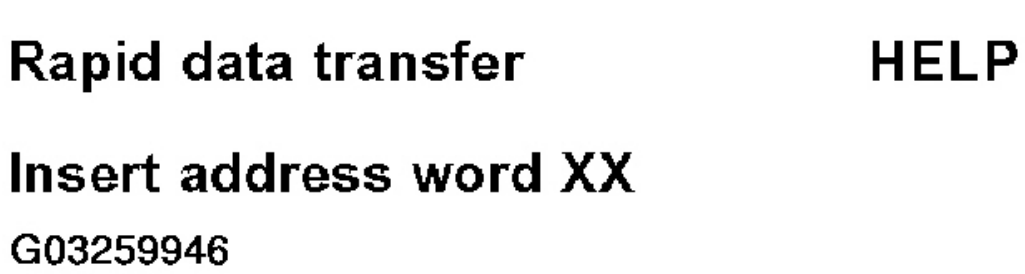


Fig. 47: VAG 1551 Scan Tool Display - Instrument Cluster Coding, Up To 06.99 (6 Of 6)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

READ MEASURING VALUE BLOCK (FUNCTION 08)

Use this function to observe various instrument cluster inputs.

- Connect VAG 1551 Scan Tool (ST), select operating mode 1 "Rapid data transfer", switch on ignition and input address word 17 "Instrument cluster".

Indicated on display

- Press buttons -0- and -8- to select function 08 "Read Measuring Value Block".

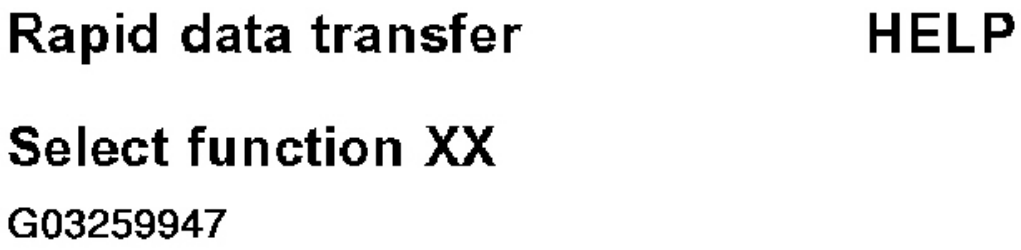


Fig. 48: VAG 1551 Scan Tool Display - Read Measuring Value Block, Up To 06.99 (1 Of 4)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

- Press -Q- button to confirm input.

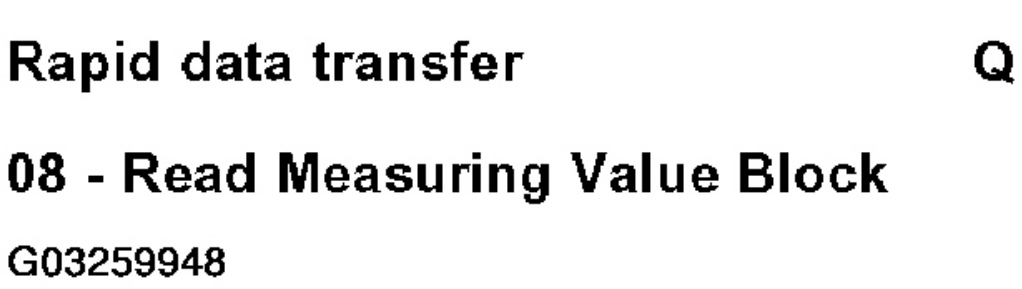


Fig. 49: VAG 1551 Scan Tool Display - Read Measuring Value Block, Up To 06.99 (2 Of 4)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

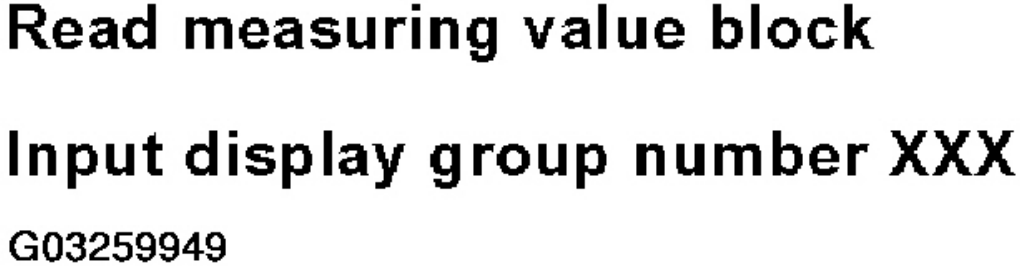


Fig. 50: VAG 1551 Scan Tool Display - Read Measuring Value Block, Up To 06.99 (3 Of 4)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

DISPLAY GROUPS, INTERPRETING

DISPLAY GROUPS (UP TO 06.99)

Display group	Indicated on display
001	1 Road speed (Km/h) 2 Engine speed (RPM) 3 Oil pressure switch 2 min. 4 Time (not for VDO)
002	1 Trip recorder (Km) 2 Fuel in liters

	3 Manufacturer code M73: ohm value = for fuel level sensor -G- Manufacturer code VDO: ambient temperature in °C 4 Manufacturer code M73: ambient = temperature in °C
003	1 Coolant temperature in °C

- Select relevant display group number, and press -Q- button to confirm input.

Example of measuring value block for Magneti Marelli instrument cluster -M73-:

- Press buttons -0-, -0- and -2- to input display group no. 002.

Indicated on display

INPUT DISPLAY VALUES (UP TO 06.99)

Displayed value	Designation
820 km	1 = Distance traveled
41 ltr.	2 = Fuel gauge
250 ohm	3 = ohm value of fuel level sensor -G-

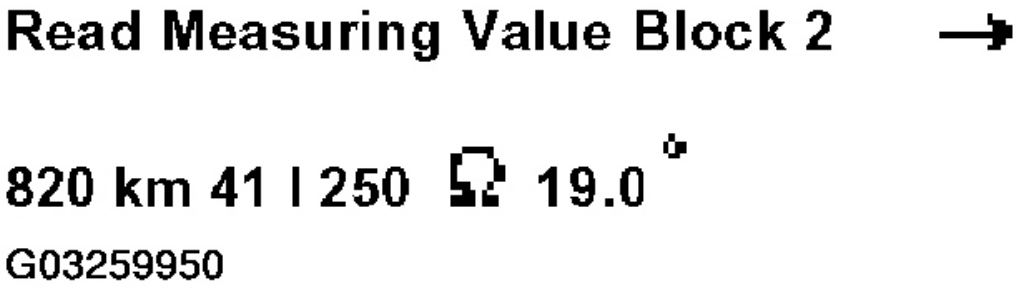


Fig. 51: VAG 1551 Scan Tool Display - Read Measuring Value Block, Up To 06.99 (4 Of 4)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

NOTE:

- **The actual sensor values are shown in the display field. The values in the instrument cluster are modified and may be different.**
- **The coolant temperature gauge will indicate 90° C (194°F), if the actual coolant temperature varies between approx. 75°C (167°F) and 107°C (225° F).**
- **For vehicles with VDO instrument cluster, if the fuel level sensor has an open or short circuit, display field 2 displays 0L and display field 3 remains empty.**

- **For vehicles with Magneti-Marelli instrument cluster -M73-, display field 2 displays 2L for short circuit and 67L for open circuit. Display field 3 displays 8 ohm for short circuit and > 350 ohm for an open circuit.**
- **Other display groups are possible, but are not required for troubleshooting.**

ADAPTATION (FUNCTION 10)

Use this function to initiate and store the following changes:

- Adaption of odometer reading when replacing/exchanging instrument cluster
- Adaption of fuel gauge reading

Individual functions can be called up using the appropriate adaptation channel number from adaptation table.

Adaptation table

ADAPTATION FUNCTIONS (UP TO 06.99)

Adaptation channel	Adaptation functions
09	Odometer Up To 06.98, adaptation See **ODOMETER READING UP TO 06.98 MODELS, ADAPTATION** Odometer 06.98 & Up, adaptation See **ODOMETER, ADAPTATION**
30	Fuel gauge, adaptation See **FUEL GAUGE, CHECKING (ADAPTATION)**

NOTE: **After changing an adaptation value or ending an adaptation channel the function "10 - adaptation" must be performed to select another adaptation channel!**

ODOMETER READING UP TO 06.98 MODELS, ADAPTATION

- Odometer reading adaptation for vehicles from 06.98, See **ODOMETER, ADAPTATION**
- Odometer reading adaptation using Vehicle Diagnostic, Testing and Information System VAS 5051 (all model years), See Additional Information, Odometer adaptation with VAS 5051.

NOTE:

- **Total distance travelled by the vehicle can be read from the malfunctioning instrument cluster or determined by vehicle service history.**
- **Total distance travelled display of new instrument cluster must not be more than 100 km (63 mi) before adaptation.**
- **Total distance travelled to be transferred to the new instrument cluster must exceed 100 km (63 mi).**
- **Adapting total distance travelled is only possible once and only in a**

positive (upwards) direction.

- **Adaptation can be interrupted with the "C" button of the VAG 1551/1552 Scan Tool (ST).**
- **Correcting a false entry which has been confirmed is not possible. The instrument cluster must be exchanged for a new one.**
- **Adaptation value on instrument clusters for Canadian models must be entered in kilometers.**
- **Adaptation value on instrument clusters for US models must be entered in miles.**

Example:

The malfunctioning instrument cluster has an odometer reading of 89627 (either kilometers or miles). The odometer display can be transferred to the new instrument cluster as follows:

- Connect VAG1551 Scan Tool (ST), select 1 "Rapid Data Transfer", switch on ignition, input address word 17 "Instrument Cluster".
- Press -Q- button to confirm input.

  Various data appears in the display. The manufacturer's code is also displayed, See **INSTRUMENT CLUSTER 06.99, ON BOARD DIAGNOSTIC (OBD)** .

- Press --> button.

Indicated on display

- Press button -1- twice to select "Login Procedure" function 11
- Press -Q- button to confirm input.

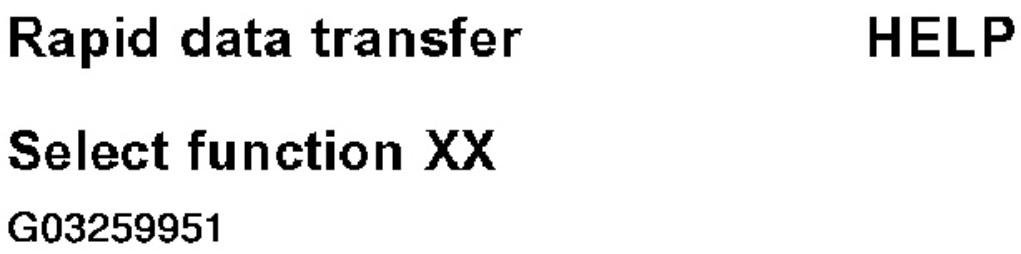


Fig. 52: VAG 1551 Scan Tool Display - Adaptation, Up To 06.98 Models (1 Of 17)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

- Press -Q- button to confirm input.

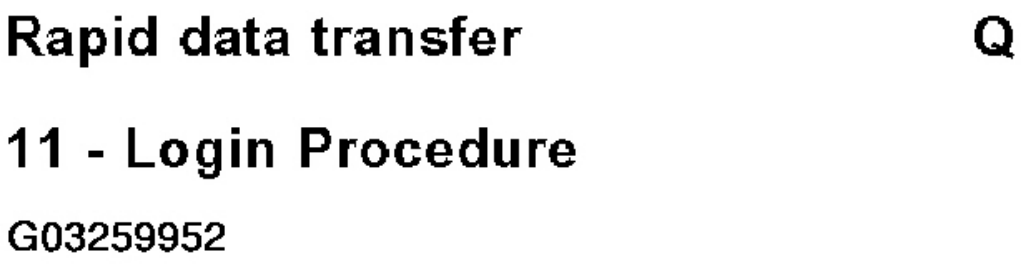


Fig. 53: VAG 1551 Scan Tool Display - Adaptation, Up To 06.98 Models (2 Of 17)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

- Input code number 13861.

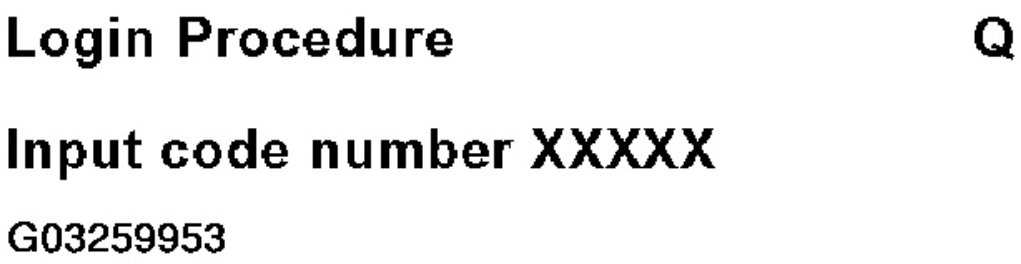


Fig. 54: VAG 1551 Scan Tool Display - Adaptation, Up To 06.98 Models (3 Of 17)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

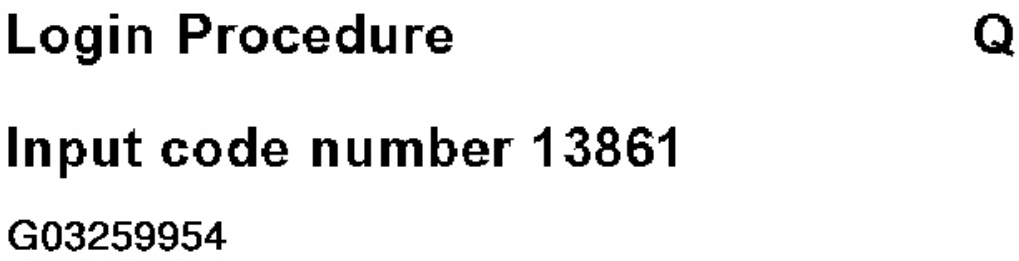


Fig. 55: VAG 1551 Scan Tool Display - Adaptation, Up To 06.98 Models (4 Of 17)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

If a wrong code number is entered 3 times, "FAIL" appears in odometer display.

In this case the ignition must be switched off and on again, and the login procedure repeated using the correct code number.

Electronic radio theft protection must disengage.

See

- Press -Q- button to confirm input.

Indicated on display

- Press buttons -1- and -0- to select function 10, "Adaptation".

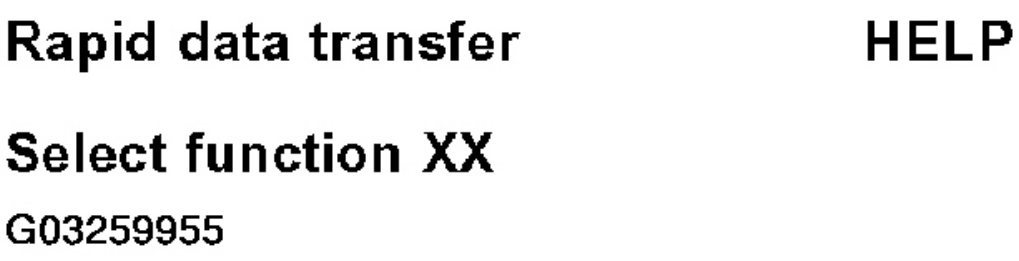


Fig. 56: VAG 1551 Scan Tool Display - Adaptation, Up To 06.98 Models (5 Of 17)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

- Press -Q- button to confirm input.

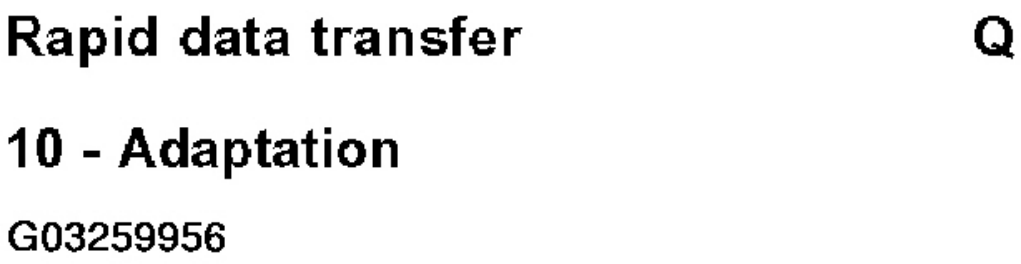


Fig. 57: VAG 1551 Scan Tool Display - Adaptation, Up To 06.98 Models (6 Of 17)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

- Press buttons -0- and -9- to select channel 09.

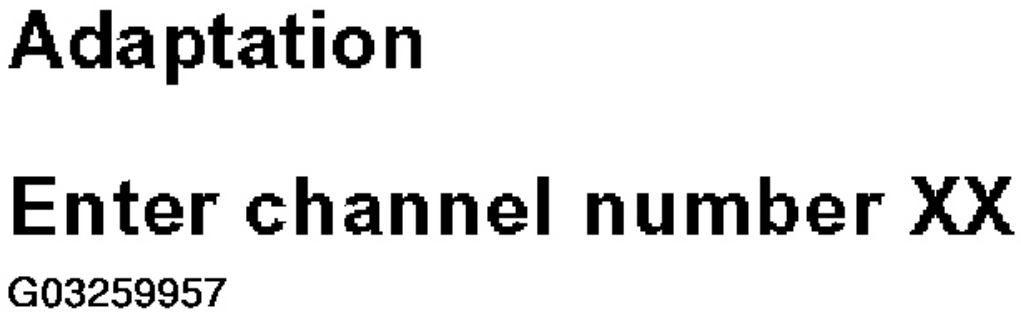


Fig. 58: VAG 1551 Scan Tool Display - Adaptation, Up To 06.99 (7 Of 17)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

- Press -Q- button to confirm input.

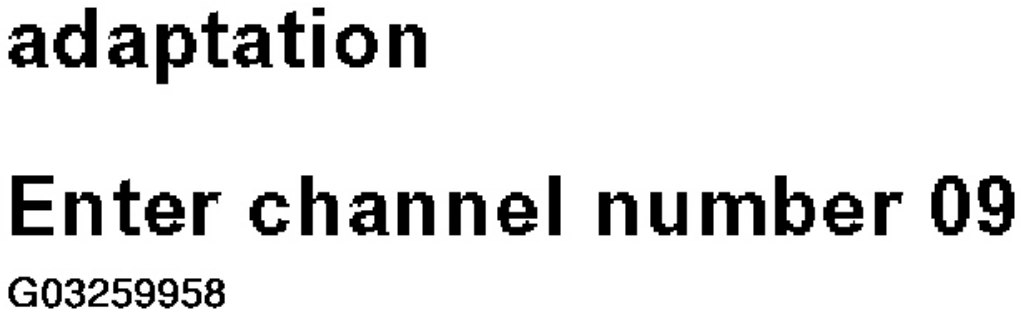


Fig. 59: VAG 1551 Scan Tool Display - Adaptation, Up To 06.98 Models (8 Of 17)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

- Move forward in program by pressing --> button.

Fig. 60: VAG 1551 Scan Tool Display - Adaptation, Up To 006.98 Models (9 Of 17)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

- Input adaptation value (odometer reading) using VAG 1551/1552 button pad.

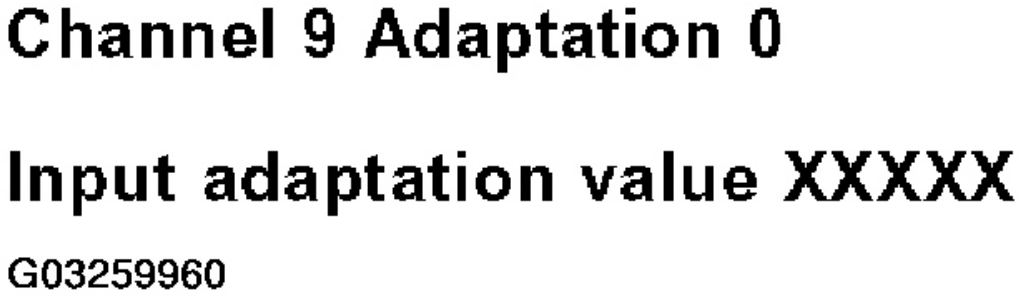


Fig. 61: VAG 1551 Scan Tool Display - Adaptation, Up To 06.98 Models (10 Of 17)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

The last position of the odometer reading must be rounded off to the nearest 10.

For US models with Magneti Marelli (M73) instrument clusters, enter odometer reading in miles.

An odometer reading of 89627 miles (US) or 89627 kilometers (Canada) produces an adaptation value of 08963:

EXAMPLE OF ODOMETER ADAPTION VALUE (UP TO 06.98 MODELS)

0	**8**	**9**	**6**	**3**	
X					Hundred thousands: 100000 -655350
	X				Ten thousands:10000 - 90000
		X			Thousands: 1000 - 9000
			X		Hundreds: 100 - 900
				X	Tens: 10-90
					Ones: round up to next ten

- Input adaptation value using VAG 1551/1552 button pad.

Indicated on display

- Press -Q- button to confirm input.

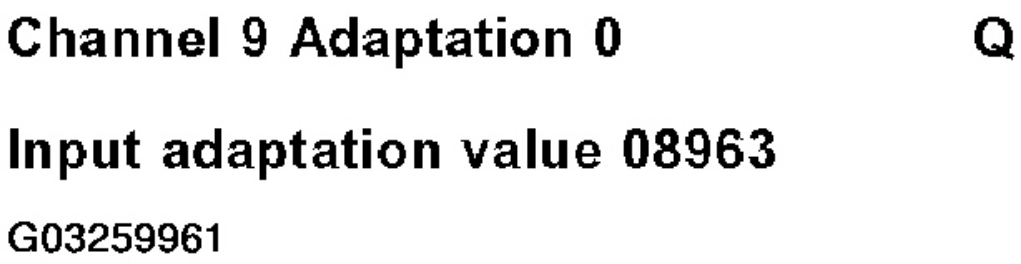


Fig. 62: VAG 1551 Scan Tool Display - Adaptation, Up To 06.98 Models (11 Of 17)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

- Press -Q- button to confirm input.

Fig. 63: VAG 1551 Scan Tool Display - Adaptation, Up To 06.98 Models (12 Of 17)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

If adaptation value is not correct, e.g. a false entry:

- **Press -C- button to input correct value .**
- **Press -Q- button to confirm input .**

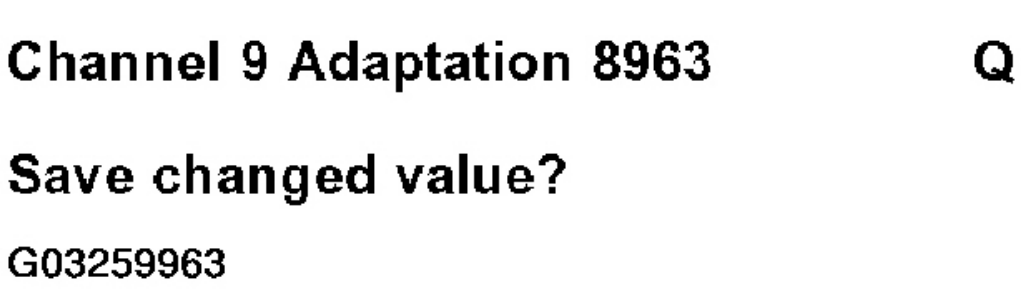


Fig. 64: VAG 1551 Scan Tool Display - Adaptation, Up To 06.98 Models (13 Of 17)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Odometer display shows new distance .

Indicated on display

- **Press --> button to complete adaptation sequence** .

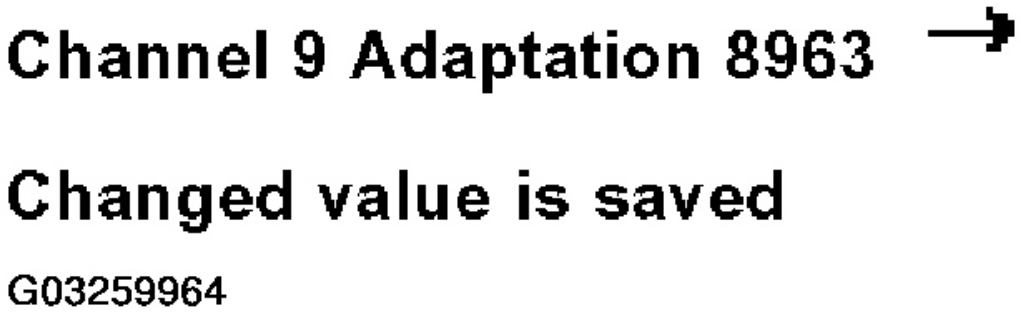


Fig. 65: VAG 1551 Scan Tool Display - Adaptation, Up To 06.98 Models (14 Of 17)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

- Press buttons -0- and -6- to select function 06 "End Output".

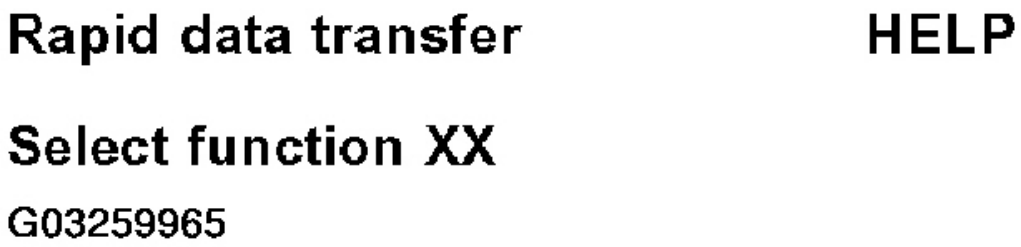


Fig. 66: VAG 1551 Scan Tool Display - Adaptation, Up To 06.98 Models (15 Of 17)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

- Press -Q- button to confirm input.

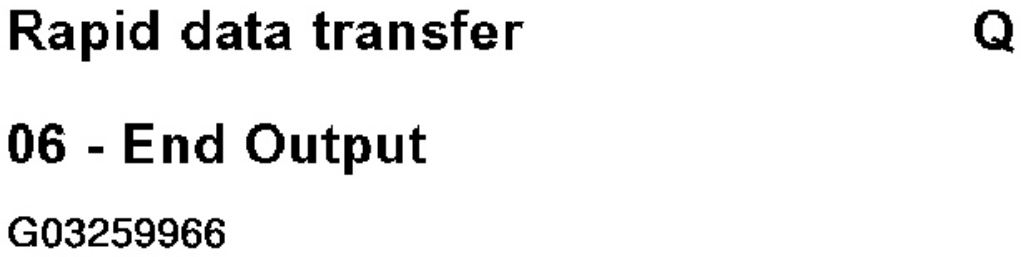


Fig. 67: VAG 1551 Scan Tool Display - Adaptation, Up To 06.98 Models (16 Of 17)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

The scan tool returns to the start of the program sequence.

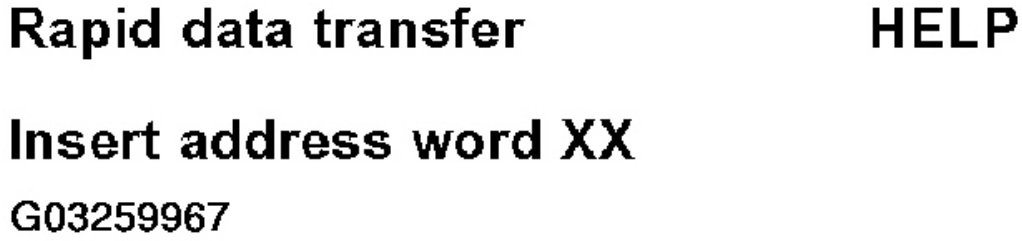


Fig. 68: VAG 1551 Scan Tool Display - Adaptation, Up To 06.98 Models (17 Of 17)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

FUEL GAUGE, CHECKING (ADAPTATION)

If the fuel gauge displays the contents of the fuel tank as being too high or too low, the fuel gauge needle position in the instrument cluster can be corrected (adapted).

- Perform Output Diagnostic Test Mode (DTM) for instrument cluster, See **OUTPUT DIAGNOSTIC TEST MODE (DTM) (FUNCTION 03)** .
- Check function of fuel gauge sender if Output Diagnostic Test Mode (DTM) does not indicate a malfunction:
- Check resistance value of fuel gauge sender in measuring value block. Read measuring value block. See **READ MEASURING VALUE BLOCK (FUNCTION 08)** .

If measuring value block does not display a short circuit or open circuit in the wiring or the fuel gauge sender, continue checks:

Special tools, testers, measuring units and auxiliary items required

- Switch ignition off.
- Drain fuel tank completely using approved fuel cart, then fill with 10 liters (2.64 gal) of fuel (ensure ignition is OFF).

WARNING:

- **Fire hazard. DO NOT smoke or work near heaters or have anything in the area that can ignite fuel.**
- **Drain fuel using an approved fuel cart.**
- **Wear fuel-resistant gloves whenever working with open parts of the fuel system.**

- Connect VAG 1551 Scan Tool (ST), select 1 "Rapid Data Transfer", switch on ignition, input address word 17 "Instrument cluster".

Indicated on display

- Press -Q- button to confirm input.

Fig. 69: VAG 1551 Scan Tool Display - Fuel Gauge Checking, Up To 06.99 (1 Of 14)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display (example only)

- Press --> button.

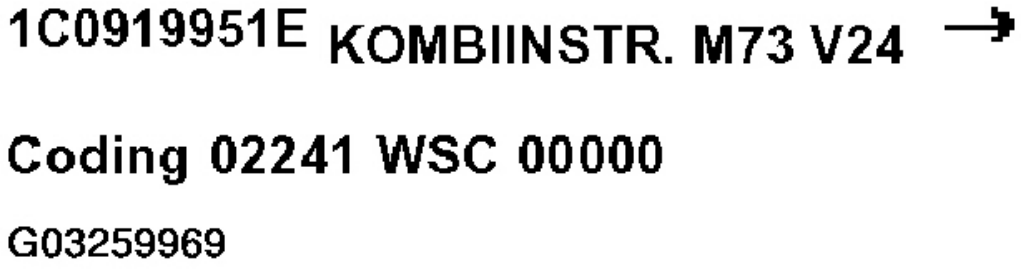


Fig. 70: VAG 1551 Scan Tool Display - Fuel Gauge Checking, Up To 06.99 (2 Of 14)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display (select function):

- Press buttons -1- and -0- to select function 10 "Adaptation".

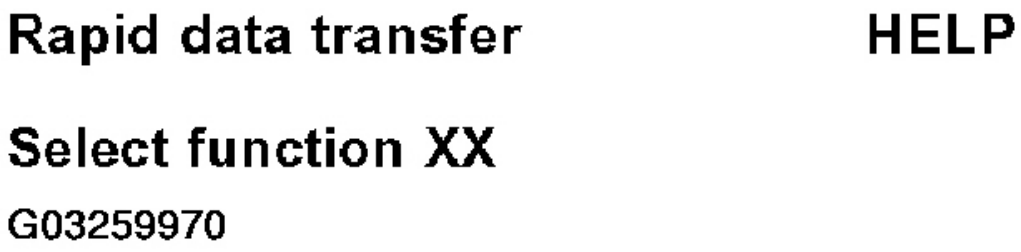


Fig. 71: VAG 1551 Scan Tool Display - Fuel Gauge Checking, Up To 06.99 (3 Of 14)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

- Press -Q- button to confirm input.

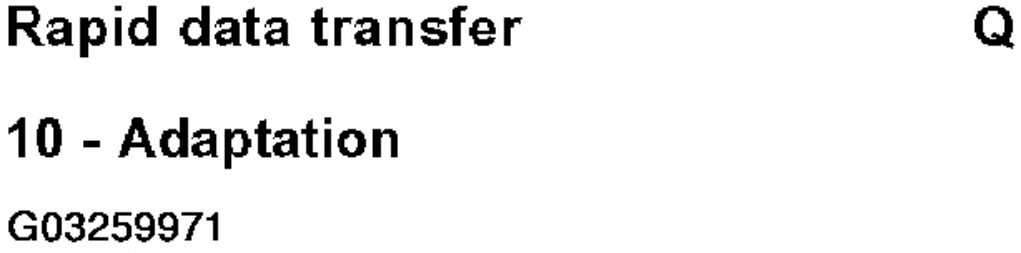


Fig. 72: VAG 1551 Scan Tool Display - Fuel Gauge Checking, Up To 06.99 (4 Of 14)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

- Press buttons -3- and -0- to select channel 30.

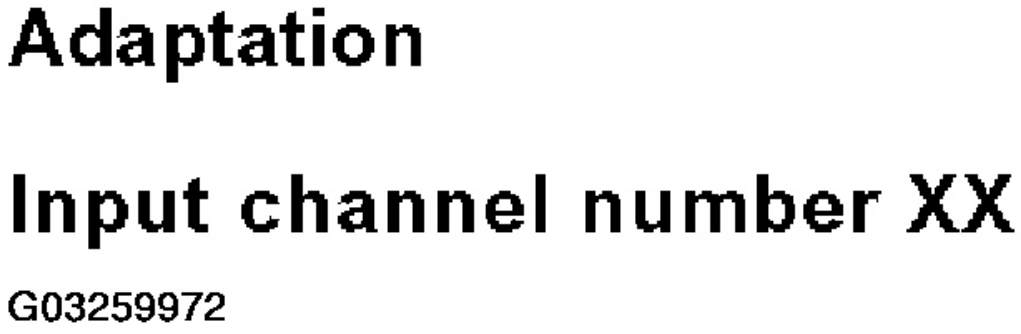


Fig. 73: VAG 1551 Scan Tool Display - Fuel Gauge Checking, Up To 06.99 (5 Of 14)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

- Press -Q- button to confirm input.

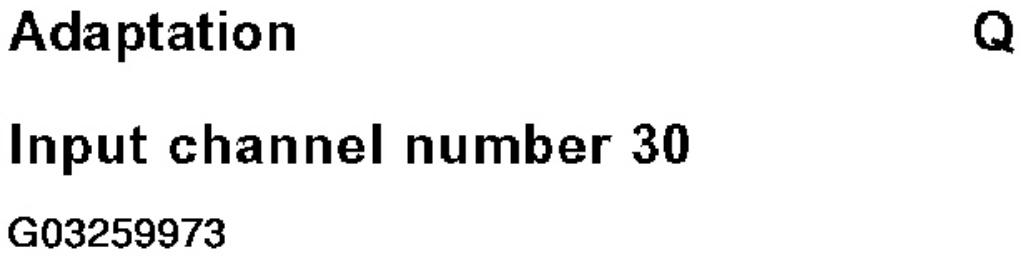


Fig. 74: VAG 1551 Scan Tool Display - Fuel Gauge Checking, Up To 06.99 (6 Of 14)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

- Use button -1- to decrease adaptation value down to 120.
- Use button -3- to increase adaptation value up to 136, e.g.130.

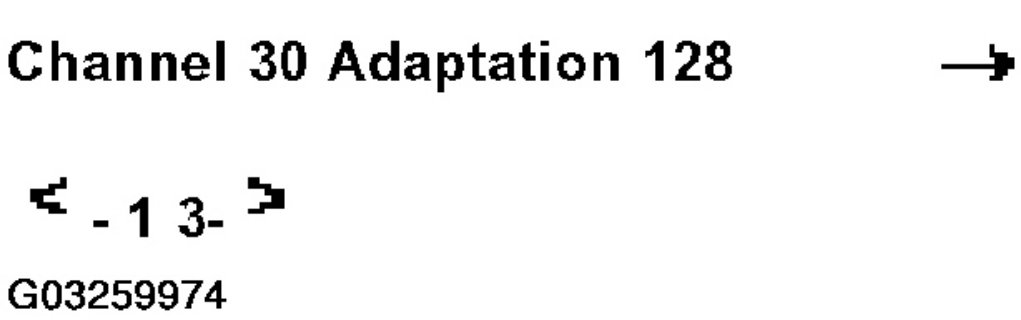


Fig. 75: VAG 1551 Scan Tool Display - Fuel Gauge Checking, Up To 06.99 (7 Of 14)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

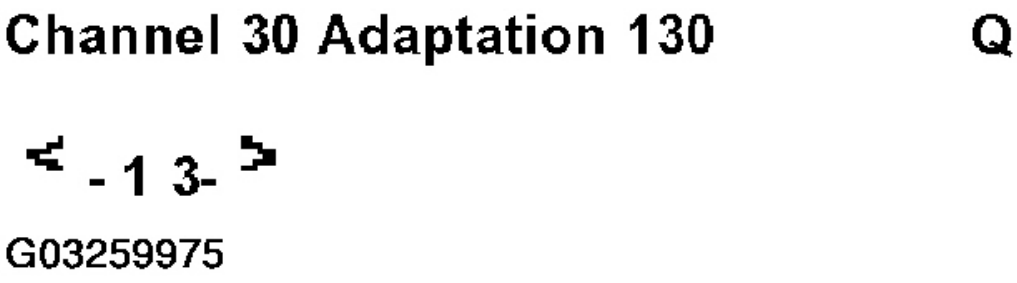


Fig. 76: VAG 1551 Scan Tool Display - Fuel Gauge Checking, Up To 06.99 (8 Of 14)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Adaptation is correct when the fuel gauge needle is positioned on the right-hand red graduation (reserve), as illustrated.

When needle position is OK:

- Press -Q- button to confirm input.

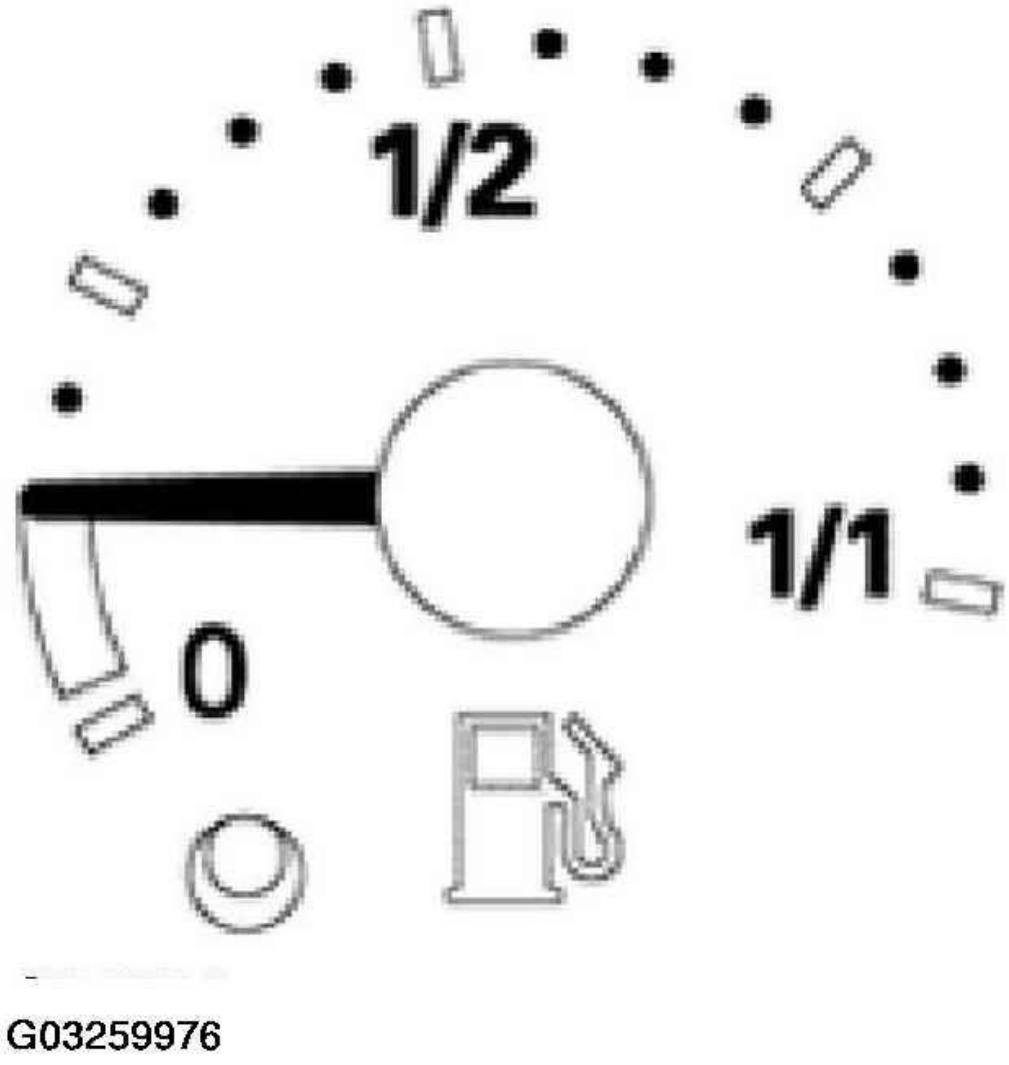


Fig. 77: VAG 1551 Scan Tool Display - Fuel Gauge Checking, Up To 06.99 (9 Of 14)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display (example only):

- **Press -Q- button to confirm input** .

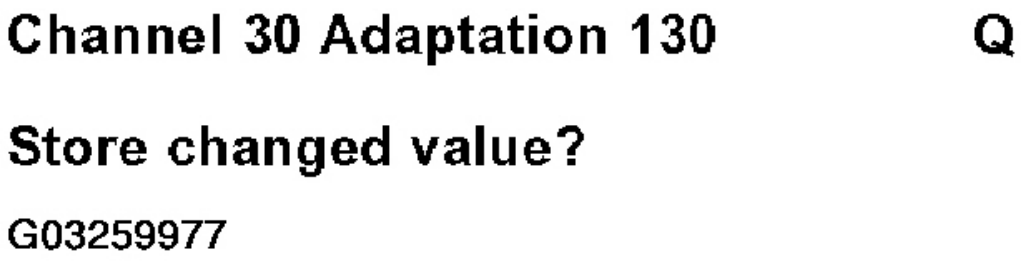


Fig. 78: VAG 1551 Scan Tool Display - Fuel Gauge Checking, Up To 06.99 (10 Of 14)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

- Press --> button to complete adaptation sequence.

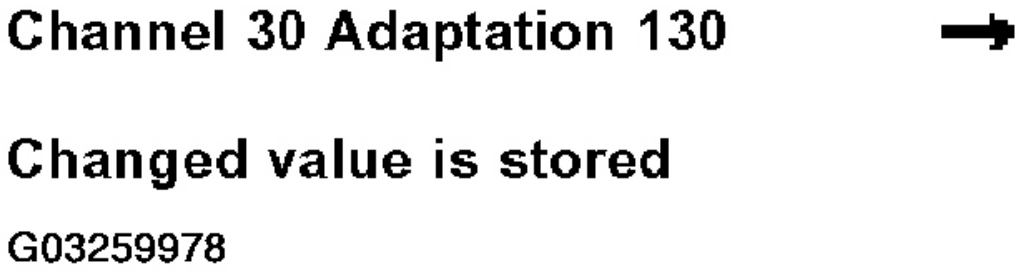


Fig. 79: VAG 1551 Scan Tool Display - Fuel Gauge Checking, Up To 06.99 (11 Of 14)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

NOTE: If fuel gauge cannot be adapted correctly, replace fuel gauge sender.

- Press buttons -0- and -6- to select function 06 "End Output".

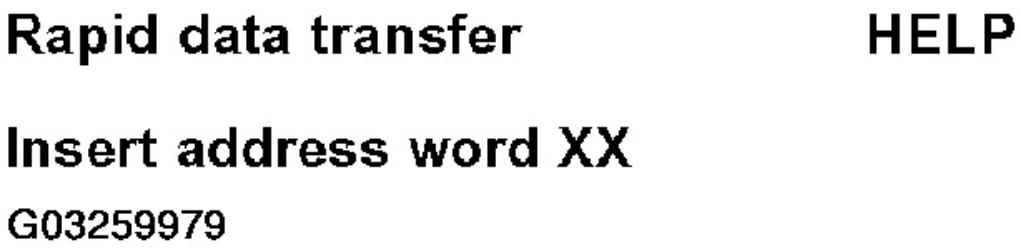


Fig. 80: VAG 1551 Scan Tool Display - Fuel Gauge Checking, Up To 06.99 (12 Of 14)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

- Press -Q- button to confirm input.

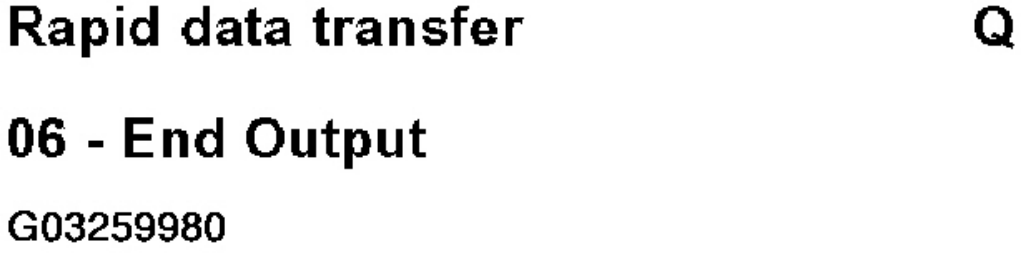


Fig. 81: VAG 1551 Scan Tool Display - Fuel Gauge Checking, Up To 06.99 (13 Of 14)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

The scan tool returns to the start of the program sequence.

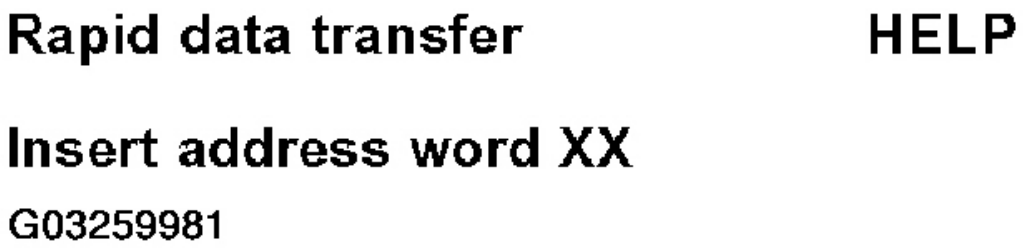


Fig. 82: VAG 1551 Scan Tool Display - Fuel Gauge Checking, Up To 06.99 (14 Of 14)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

INSTRUMENT CLUSTER FROM 06.99 & UP, ON BOARD DIAGNOSTIC (OBD)

GENERAL INFORMATION

The instrument cluster is controlled by an internal microprocessor with On Board Diagnostic (OBD) capability. If malfunctions occur in monitored sensors and components, Diagnostic Trouble Codes (DTC) will be stored in memory together with an indication of malfunction type. A maximum of 4 DTCs can be stored simultaneously.

Sporadic malfunctions (indicated in the readout by "SP") are automatically cancelled if not repeated in the next 50 engine start cycles.

For OBD purposes, the instrument cluster counts one start cycle whenever the ignition is switched on longer than 5 min. and a minimum speed of 30 km/h (18.5 mp/h) is exceeded.

Before performing any troubleshooting or inspection, always begin by checking for DTCs using the OBD program. DTCs stored in memory are retrieved/checked with either the VAG 1551/1552 Scan Tool (ST) or VAS 5051 Vehicle Diagnostic Tester.

Instrument clusters from 06.99 are integrated into the vehicle CAN Data Bus network (may also be known as "CAN-Bus" or "Data-Bus").

The Data Bus On Board Diagnostic Interface -J533- (which is integrated into the instrument cluster) enables data to be exchanged between the vehicle CAN Data-Bus network and the Data Link Connector (DLC) "K-wire".

The Data Bus On Board Diagnostic Interface -J533- has specific On Board Diagnostic (OBD) capabilities.

-J533- must be coded depending on the vehicle equipment when replacing the instrument cluster. See **DATA BUS ON BOARD DIAGNOSTIC INTERFACE -J533- "GATEWAY"** .

NOTE: The following description and illustrations deal specifically with the VAG1551 scan tool. VAG 1552 and VAS 5051 procedures are similar.

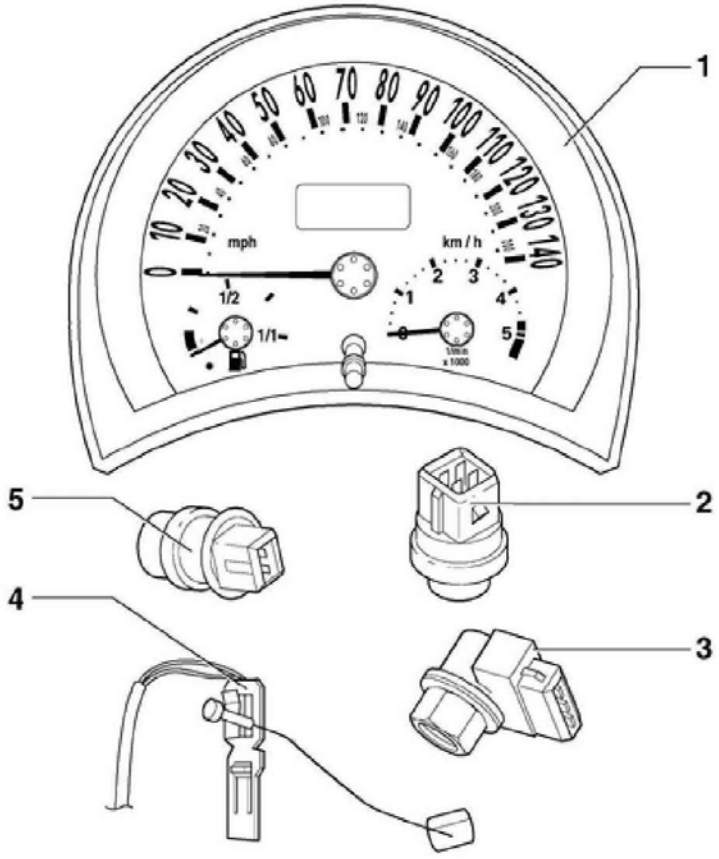
Notes on exchanging instrument cluster

- Do not disassemble instrument cluster.
- When replacing an instrument cluster is necessary, follow normal exchange part procedures.
- Complete report form and return together with instrument cluster.
- Use original packaging from new cluster when returning items.
- Replacement instrument clusters must be coded according to vehicle market version and equipment level variables using VAG 1551 Scan Tool (ST). See **INSTRUMENT CLUSTER UP TO 10.00 MODELS, CODING (FUNCTION 07)** .
- Odometer reading must be adapted to the replacement instrument cluster. See **Adaptation (function 10)** .
- The Data Bus On Board Diagnostic Interface -J533- must be coded according to vehicle market version and equipment level variables, See **Data Bus On Board Diagnostic Interface -J533- "Gateway"** .
- Where applicable, replacement instrument clusters must be adapted to Engine Control Module (ECM) for anti-theft immobilizer function. Use VAS 5051 Vehicle Diagnostic Testing and Information System in operating mode "Guided Fault Finding".

ELECTRICAL & ELECTRONIC COMPONENTS, LOCATIONS

CAUTION: Before beginning repairs on the electrical system:

- **Obtain the anti-theft radio security code.**
- **Switch off all electrical consumers.**
- **Switch ignition off and remove ignition key.**
- **Disconnect negative (-) battery terminal.**
- **When disconnecting and reconnecting battery terminals, observe all applicable Notes and torque specifications, as well as instructions on performing OBD program and electrical system function checks as specified. .**



1 - Instrument cluster -K-

2 - Engine coolant temperature (ECT) sensor -G2-

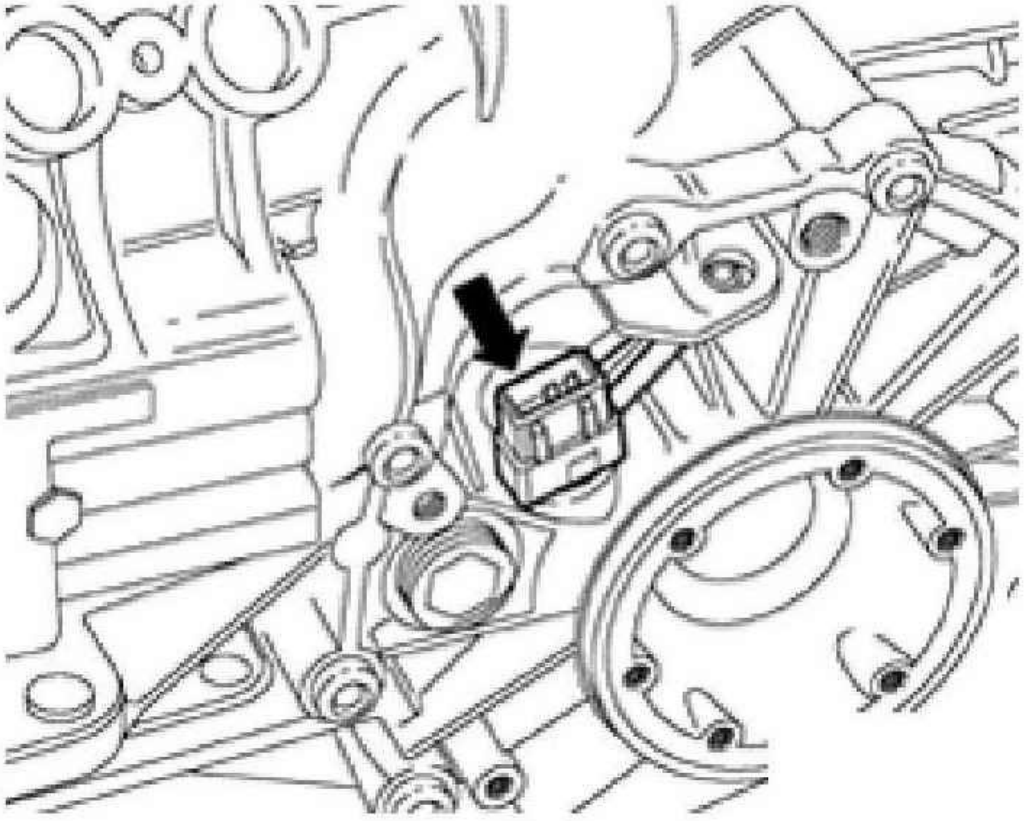
3 - Speedometer vehicle speed sensor (VSS) -G22-

4 - Sender for fuel gauge sender -G-

5 - Outside air temperature sensor -G17-

Fig. 83: Identifying Instrument Cluster Electrical & Electronic Components - From 06.99 & Up
Courtesy of VOLKSWAGEN OF AMERICA, INC.

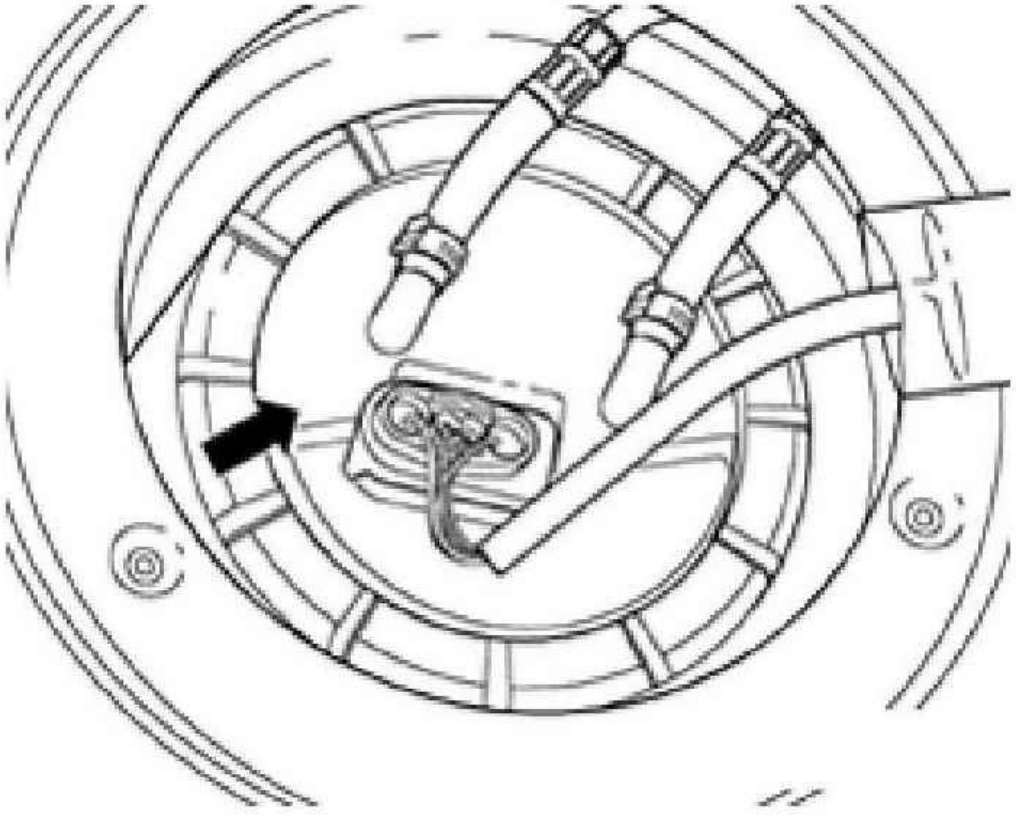
1. **Instrument cluster -K-**
    - Monitored by OBD
2. **Engine coolant temperature (ECT) sensor -G2-**
    - Location depends on type of engine
    - Monitored by OBD
3. **Speedometer vehicle speed sensor (VSS) -G22-**
    - Location, See **Fig. 84**
4. **Sender for fuel gauge sender -G-**
    - Location, See **Fig. 85**
    - Monitored by OBD
5. **Outside air temperature sensor -G17-**
    - Location, See **Fig. 86**
    - Monitored by OBD



G03259983

Fig. 84: Identifying Speedometer Vehicle Speed Sensor (VSS)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

The speedometer sensor -arrow- is located in the area of the left-hand drive shaft flange on manual and automatic gearbox vehicles.

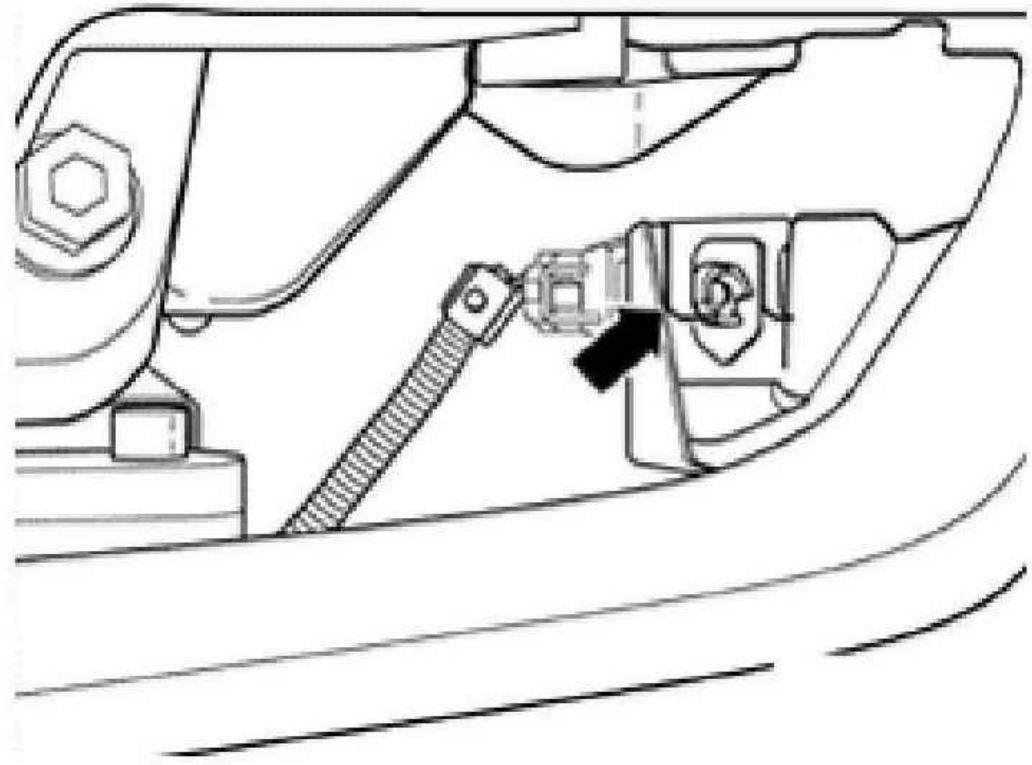


G03259984

Fig. 85: Identifying Sender For Fuel Gauge Sender
Courtesy of VOLKSWAGEN OF AMERICA, INC.

The sender for fuel gauge -G- is located in the fuel tank on the fuel delivery unit -arrow-.

To remove and install fuel delivery unit, see appropriate article in ENGINE/FUEL SYSTEM.



G03259985

Fig. 86: Identifying Outside Air Temperature Sensor
Courtesy of VOLKSWAGEN OF AMERICA, INC.

The outside air temperature sensor -G17- is located on left of front bumper behind the outer air grille.

Unclip air grille to remove sender.

See **FRONT BUMPER, ASSEMBLY OVERVIEW** .

VAG 1551 SCAN TOOL (ST), CONNECTING, SELECTING FUNCTIONS & CHECKING CONTROL MODULE VERSIONS

Special tools, testers, and auxiliary items

- VAG 1551 or VAG 1552 Scan Tool (ST)
- Optional: VAS 5051 Vehicle Diagnostic Tester

Fig. 87: Identifying VAG 1551 Or VAG 1552 Scan Tool (ST)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

- VAG 1551/3 or 1551/3B adapter cable

Fig. 88: Identifying VAG 1551/3 Or 1551/3B adapter cable
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Prerequisites:

- All fuses OK according to wiring diagram.
- Battery (B+) voltage at least 9 Volts.

NOTE:

- **VAG 1552 Scan Tool (ST) may be used instead of the VAG 1551 Scan Tool (ST), however a print-out is not possible.**
- **The following procedure and display references pertain only to VAG 1551 Scan Tool (ST).**

Connecting

With ignition switched off, connect VAG 1551 Scan Tool (ST) with adapter cable 1551/3 to the Data Link Connector (DLC) located above ashtray

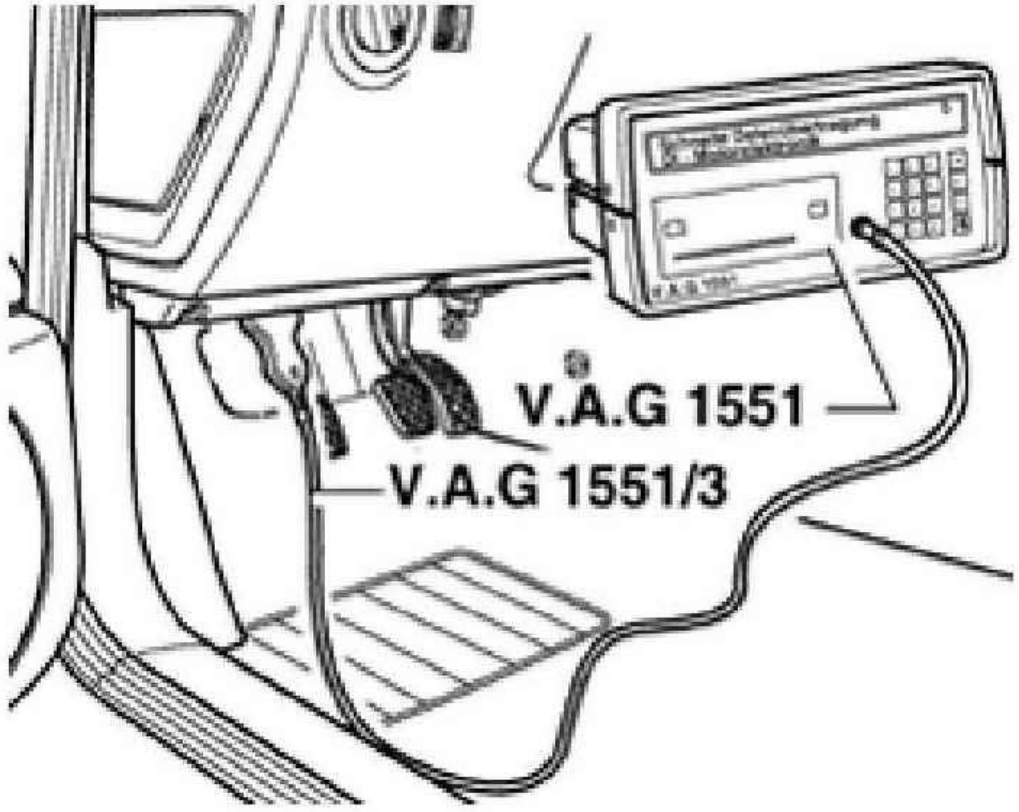


Fig. 89: connecting VAG 1551 Scan Tool To Data Link Connector
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

*Is displayed alternately

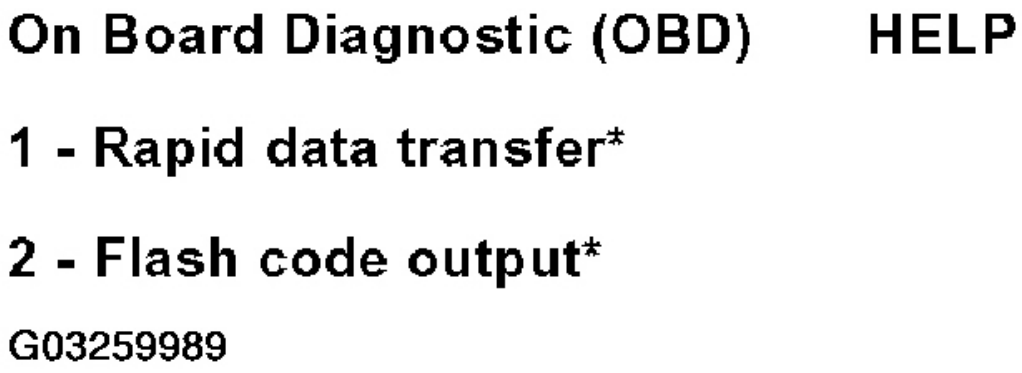


Fig. 90: VAG 1551 Scan Tool Display - Connecting VAG 1551 Scan Tool (1 Of 11)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

NOTE:

- **If display remains blank, check Scan Tool (ST) voltage supply according to wiring diagram.**
- **Additional operating instructions can be called up by pressing HELP button.**
- **The --> button is used to advance through program sequence.**
- **In operating mode 1 "Rapid data transfer," function 00 "Automatic test sequence" can be carried out. The DTC memory of all control modules with OBD capability are checked automatically.**

- Switch on ignition.
- Switch on printer with the Print button (indicator lamp in button lights up).
- Press button 1 for "Rapid data transfer" mode.

Indicated on display:

- Press buttons -1- and -7- to select instrument cluster address word 17.

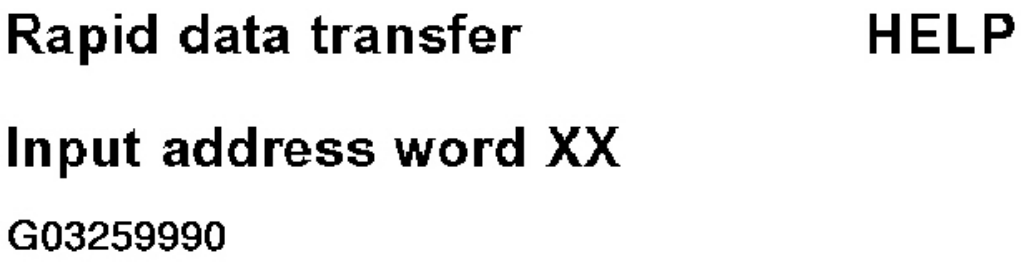


Fig. 91: VAG 1551 Scan Tool Display - Connecting VAG 1551 Scan Tool (2 Of 11)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Press -Q- button to confirm input.

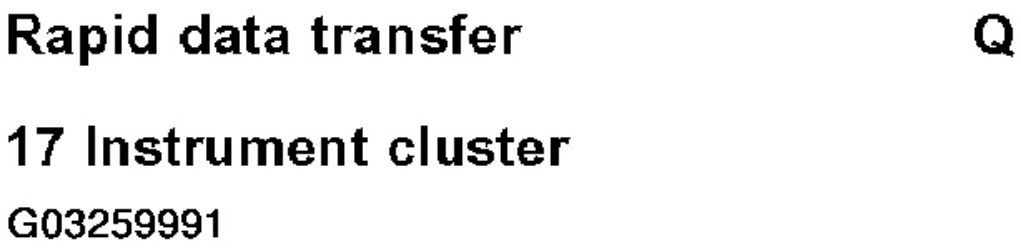


Fig. 92: VAG 1551 Scan Tool Display - Connecting VAG 1551 Scan Tool (3 Of 11)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

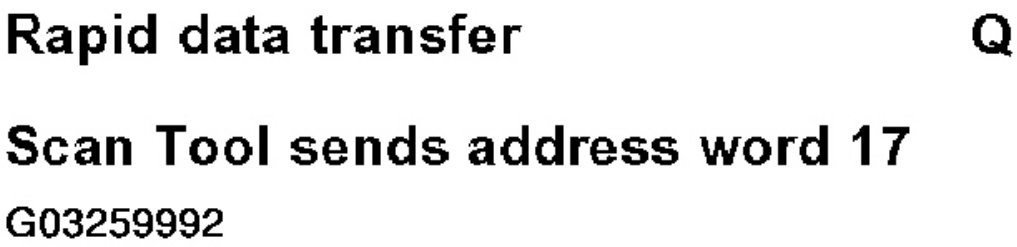


Fig. 93: VAG 1551 Scan Tool Display - Connecting VAG 1551 Scan Tool (4 Of 11)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Control module version, checking

Indicated on display (example only: instrument cluster with manufacturer code VDO):

Readout, top line

- 1CO 920 90 = Control module part number.
- 1C Combi instrument = Model & system designation
- VDO (VDO), MMO (Motometer) M73 (Magneti Marelli) = Manufacturer's code (On new instrument clusters manufacturer code BOO may appear.)
- V04 = Software version

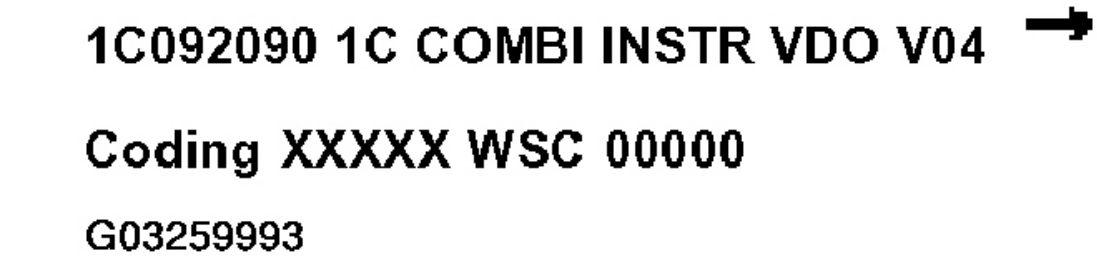


Fig. 94: VAG 1551 Scan Tool Display - Connecting VAG 1551 Scan Tool (5 Of 11)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Readout, bottom line

- Coding XXXXX = Code number
- WSC 00000 = Workshop code (On control modules not previously coded (e.g.: on new replacements), the workshop code is automatically stored in the control module memory when accessing OBD functions for the first time. An existing workshop code indicates location which last performed coding on the unit.)

CAUTION: Part numbers are for reference only. Always check with your Parts Department for the latest parts information.

NOTE:

- **If this message appears in thay:**
  - **Press --> button.**

  MMO instrument clusters are identified by IMMO-IDENTNO: VWZ6

  VDO instrument clusters are identified by IMMO-IDENTNO: VWZ7

  M73 instrument clusters are identified by IMMO-IDENTNO: VWZ5

Fig. 95: VAG 1551 Scan Tool Display - Connecting VAG 1551 Scan Tool (6 Of 11)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

- **If this message appears in the display:**

  Will be indicated on display:

  - **Press "HELP" button to print out a list of possible malfunction causes.**
  - **After rectifying malfunction, re-enter address word 17 for instrument cluster and press Q button to confirm.**

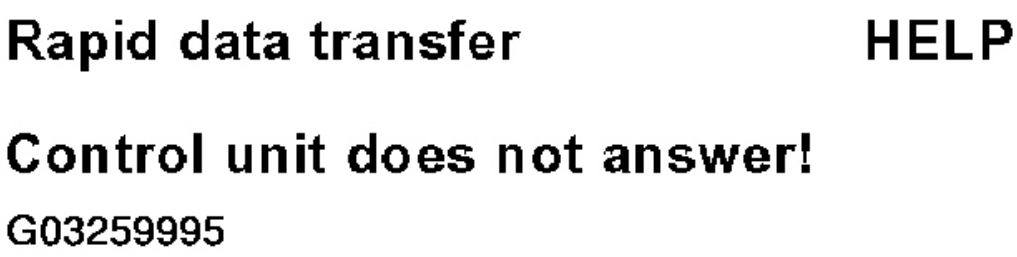


Fig. 96: VAG 1551 Scan Tool Display - Connecting VAG 1551 Scan Tool (7 Of 11)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Press --> button.

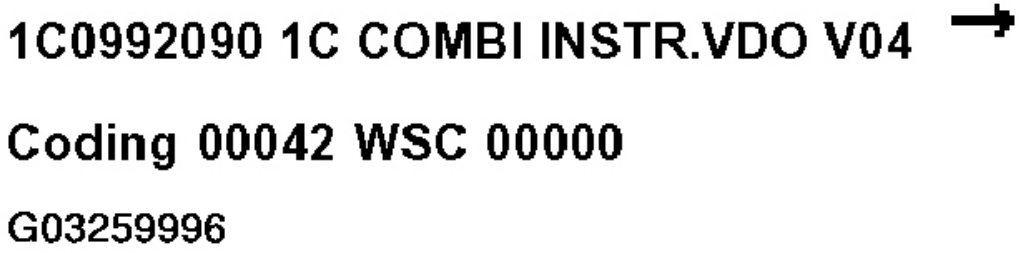


Fig. 97: VAG 1551 Scan Tool Display - Connecting VAG 1551 Scan Tool (8 Of 11)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Press --> button.

Fig. 98: VAG 1551 Scan Tool Display - Connecting VAG 1551 Scan Tool (9 Of 11)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display (select function):

- List of available functions

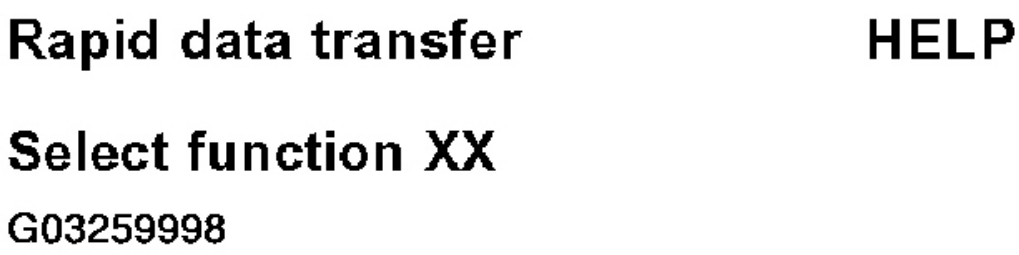


Fig. 99: VAG 1551 Scan Tool Display - Connecting VAG 1551 Scan Tool (10 Of 11)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

List of available functions

LIST OF AVAILABLE FUNCTIONS (FROM 06.99 & UP)

Function No.	Function Explanation	See
01 -	Check control module version	VAG 1551 Scan Tool (ST), connecting, selecting functions & checking control module versions
02 -	Check Diagnostic Trouble Code (DTC) memory	Diagnostic Trouble Code (DTC) memory, checking (function 02)
03 -	Output Diagnostic Test Mode (DTM)	Output Diagnostic Test Mode (DTM), (function 03)
05 -	Erase DTC memory	See Diagnostic Trouble Code (DTC) memory, erasing

		(function 05)
06 -	End output	**INSTRUMENT CLUSTER 10.00, CODING (FUNCTION 07)**
07 -	Code control module 10.00	**INSTRUMENT CLUSTER 10.00, CODING (FUNCTION 07)**
07 -	Code control module 10.00	**Instrument cluster 10.00, coding (function 07)**
08 -	Read measuring value block	**Read Measuring Value Block (function 08)**
10 -	Adaptation	**Adaptation (function 10)**

NOTE:

- **Press HELP button to print out a complete list of available functions. This list indicates function capability of VAG 1551 Scan Tool (ST) only, and does not necessarily reflect function capability of vehicle systems equipped with OBD. For instrument cluster address word 17, do not attempt to select functions other than those listed above.**
- **After function is completed and forwarded with --> button, VAG 1551 Scan Tool (ST) returns to following start position:**

Indicated on display (select function):

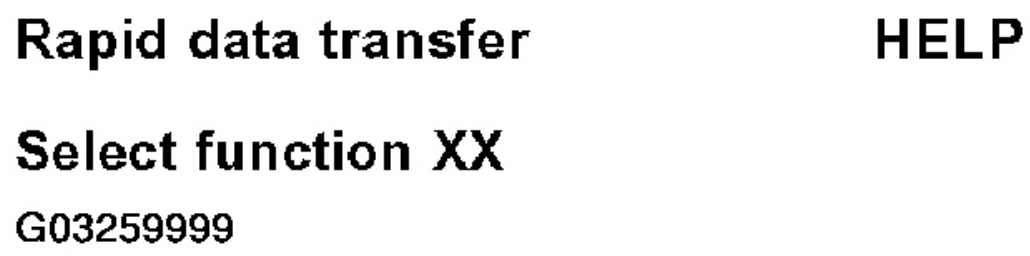


Fig. 100: VAG 1551 Scan Tool Display - Connecting VAG 1551 Scan Tool (11 Of 11)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

DIAGNOSTIC TROUBLE CODE (DTC) MEMORY, CHECKING (FUNCTION 02)

NOTE: **DTCs stored in memory along with corresponding malfunction descriptions can only be displayed by initiating the On Board Diagnostic program and checking DTC memory (function 02).**

- Connect VAG 1551 Scan Tool (ST), input address word 17, "Instrument cluster", and press --> button until "Select function XX" appears in display, See **VAG 1551 Scan Tool (ST), connecting, selecting functions & checking control module versions** .

- Switch on printer with the Print button (indicator lamp in key lights up).

Indicated on display (select function):

- Press buttons -0- and -2- to select function 02, check Diagnostic Trouble Code (DTC) memory.

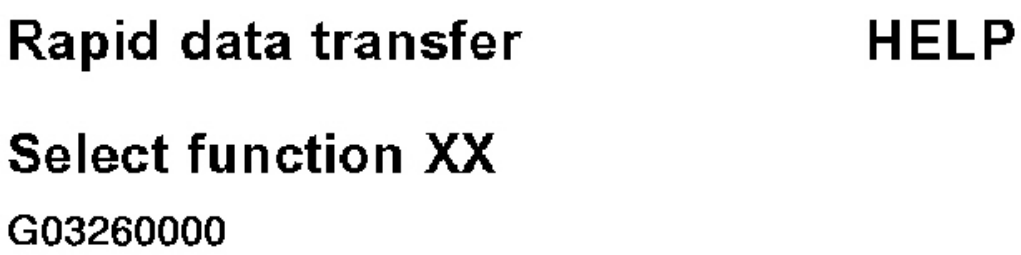


Fig. 101: VAG 1551 Scan Tool Display - Diagnostic Trouble Code Memory (1 Of 5)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Press -Q- button to confirm input.

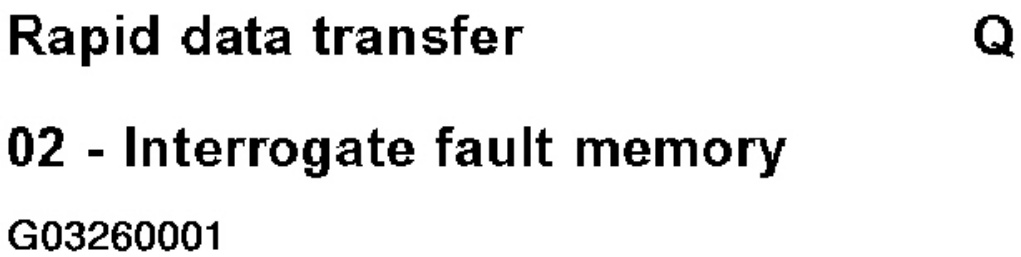


Fig. 102: VAG 1551 Scan Tool Display - Diagnostic Trouble Code Memory (2 Of 5)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

The number of stored malfunctions appears in the display.

The number of stored DTCs or "No DTC s recognized" appears in the display and are printed out one after

another.

- When the last DTC has been displayed and printed out, rectify malfunctions as described in DTC table, See **Diagnostic Trouble Code (DTC) Table** .

Fig. 103: VAG 1551 Scan Tool Display - Diagnostic Trouble Code Memory (3 Of 5)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

If "No DTC recognized" is displayed the program will return to the initial point after pressing --> button.

Fig. 104: VAG 1551 Scan Tool Display - Diagnostic Trouble Code Memory (4 Of 5)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display (select function):

If display not indicated as shown

See Scan tool operating instructions.

- End output (function 06). See **End Output (function 06)** .
- Switch off ignition and disconnect Data Link Connector (DLC).

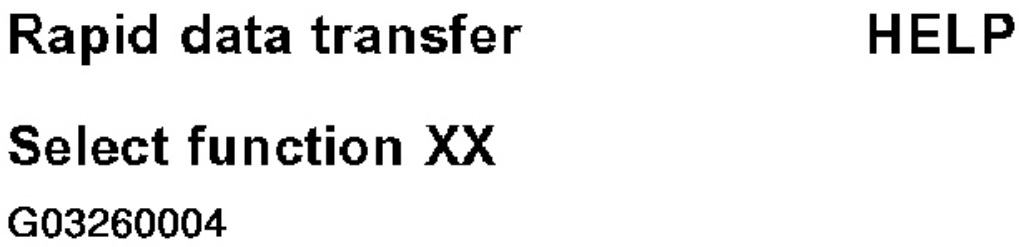


Fig. 105: VAG 1551 Scan Tool Display - Diagnostic Trouble Code Memory (5 Of 5)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

DIAGNOSTIC TROUBLE CODE (DTC) TABLE

NOTE:

- **The following table lists all malfunctions, with the corresponding 5 digit code numbers, that can be recognized by control module with indicator unit in instrument cluster insert -J285- and printed out by the VAG 1551 Scan Tool (ST).**
- **If malfunctions do not occur regularly, these are displayed as occurring sporadically ("SP").**
- **DTC codes appear only on print-out.**
- **Before replacing components, check the wiring and connections to these components as well as ground connections, according to wiring diagram.**
- **When repair has been carried out, Diagnostic Trouble Code (DTC) memory must always be erased and checked again with VAG 1551 Scan Tool (ST).**
- **If there is a specific complaint and no malfunctions are recognized after checking Diagnostic Trouble Code (DTC) memory, carry out function 03 Output Diagnostic Test Mode (DTM), (function 03) , or function 08 Read Measuring Value Block (function 08) .**

DIAGNOSTIC TROUBLE CODES (DTC)TABLE (FROM 06.99 & UP)

VAG 1551 print out	Possible cause	Possible effects	Corrective Action
00771(1) Sender for fuel gauge -G- • Open/short circuit to B+ • Short circuit to ground	• Open or short circuit between -G- and instrument cluster • G- malfunctioning	Fuel gauge display shows value 0 ("empty")	• Read measuring value block, function 08. See **Read Measuring Value Block (function 08)** . • Check for open or short circuit using wiring diagram

			• Replace sender for fuel gauge -G-
00779[2] Outside Air Temperature sensor -G17- • Open/Short circuit to B+ • Short circuit to ground	• Open or short circuit in wiring. • Outside air temperature sensor -G17- malfunctioning	Display for outside temperature display shows three dashes (-)	• Check for open or short circuit using wiring diagram • Replace outside air temperature sensor -G17-
01039[3] Engine Coolant Temperature (ECT) sensor -G2- • Open/Short circuit to B+ • Short circuit to ground	• Wiring open circuit or short between -G2- and instrument cluster • ECT sensor -G2- malfunctioning	Coolant temperature gauge needle on left stop	• Read measuring value block, function OR, see **Read Measuring Value Block (function 08)** . • Check for open or short circuit in wiring using wiring diagram • Replace ECT sensor -G2-
01044 Control module incorrectly coded	• A control module connected to vehicle CAN Data Bus network is incorrectly coded • A control module connected to vehicle CAN Data Bus network is malfunctioning	Driveability problems (shift pressure, load shift impact) Dynamic driving regulation inoperative	• Check DTC memory of all control modules connected to vehicle CAN Data Bus, troubleshoot and repair as necessary. • Confirm correct coding of all control modules coding connected to vehicle CAN Data Bus. • Replace control module.
01312 Data Bus Drive • Faulty	• Fault in CAN Data Bus wiring • Data Bus Drive in Bus-Off condition	Driveability problems (shift pressure, load shift impact) no driving dynamic regulation	• Read measuring value block, function OR, see **Read Measuring Value Block (function 08)** . • Check DTC memory of all control modules connected to vehicle CAN Data Bus, troubleshoot and repair as necessary

			• Confirm correct coding of all control modules coding connected to vehicle CAN Data Bus. • Check CAN Data Bus wiring using wiring diagram
01314 Engine Control Module (ECM) -J220- • No communication	No data transfer from Engine Control Module (ECM) over CAN Data Bus network.	Driveability problems (shift pressure, load shift impact) Dynamic driving regulation inoperative	• Check DTC memory of ECM, troubleshoot and repair as necessary. • Check CAN Data Bus wiring to ECM using wiring diagram.
01315 Transmission Control Module (TCM)-J217- • No communication	No data transfer from Transmission Control Module (TCM) over CAN Data Bus network.	Driveability problems (shift pressure, load shift impact) Dynamic driving regulation inoperative	• Check DTC memory of TCM, troubleshoot and repair as necessary. • Check CAN Data Bus to TCM using wiring diagram.
01316 ABS Control Module (w/EDL) -J204- • No communication	No data transfer from ABS control module over CAN Data Bus network.	Driveability problems (shift pressure, load shift impact) Dynamic driving regulation inoperative	• Check DTC memory of ABS control module, troubleshoot and repair as necessary • Check CAN Data Bus network to ABS control module using wiring diagram
01317 Control module with indicator unit in instrument cluster insert -J285- • No communication	• Malfunction in CAN Data Bus wiring • -J285- malfunctioning	Driveability problems (shift pressure, load shift impact) Dynamic driving regulation inoperative	• Read measuring value block of Data Bus On Board Diagnostic Interface -J533- in instrument cluster. See **Read Measuring Value Block (function 08)** . • Check DTC memory of all control modules which are connected to vehicle CAN Data Bus, troubleshoot and repair as necessary

			• Check CAN Data Bus wiring using wiring diagram
65535 Control Module • Malfunctioning		Instrument cluster malfunctioning	• Replace instrument cluster.
Other DTCs	If other DTC's are displayed that are not shown in this DTC table, perform On Board Diagnostic (OBD) of anti-theft immobilizer system using VAS 5051 Vehicle Diagnostic Testing and Information System.		
(1) DTC will load into memory only after malfunction is present continuously for a minimum of 20 seconds. During first 20 seconds "Sensor cannot be tested at this time" is displayed. (2) For vehicles with a multi-function indicator. (3) DTC display "Open circuit/short to B+" is loaded into memory when malfunction is present on engine having run for a minimum of 30 minutes.			

OUTPUT DIAGNOSTIC TEST MODE (DTM), (FUNCTION 03)

The Output Diagnostic Test Mode is part of the electrical check. The following components can be checked by the Output Diagnostic Test Mode (DTM):

- Speedometer
- Tachometer
- Coolant temperature gauge
- Fuel gauge
- Malfunction lamps
- Seat belt warning lamp (when activated using code)
- Buzzer/Gong
- Displays (odometer, multi-function indicator or digital clock, selector lever position display for automatic gearboxes)
    - If malfunction is determined when performing Output DTM, exchange instrument cluster.
    - If no malfunction is determined when performing Output DTM, check wiring and connections to instrument cluster using wiring diagram.

Output Diagnostic Test Mode (DTM), initiating

NOTE:

- **Output Diagnostic Test Mode (DTM) cannot be initiated or will be interrupted if engine is running or vehicle is moving,**
- **Use -C- button to exit test sequence at any time.**

- Connect VAG 1551 Scan Tool (ST), input address word 17 "Instrument cluster".

After control module identification and immobilizer identification number is displayed:

- Press --> button.

Indicated on display (select function):

- Press buttons -0- and -3- to select function 03 "Output Diagnostic Test Mode (DTM)".

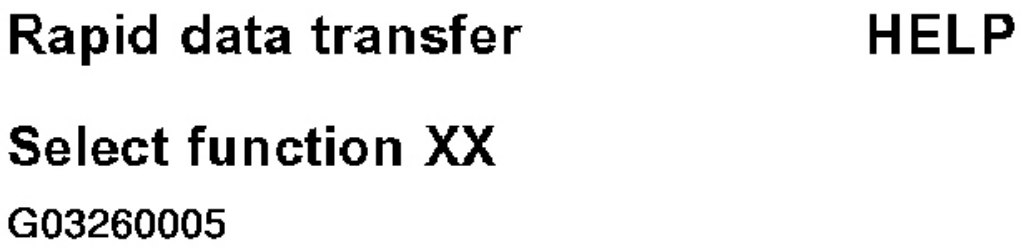


Fig. 106: VAG 1551 Scan Tool Display - Output Diagnostic Test Mode Initiating (1 Of 13)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display

- Press -Q- button to confirm input.

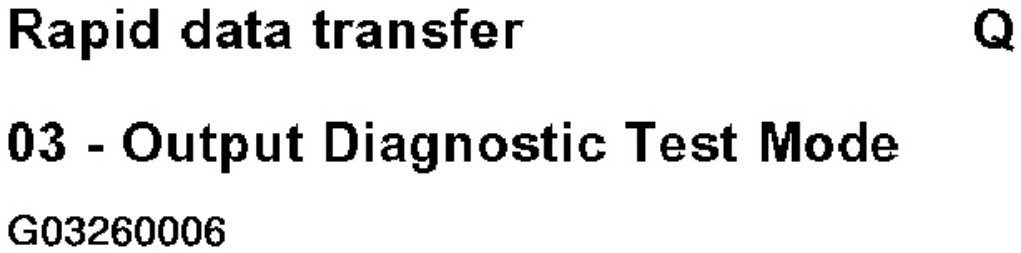


Fig. 107: VAG 1551 Scan Tool Display - Output Diagnostic Test Mode Initiating (2 Of 13)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

No indication on all displays and all warning lights to be checked are unlit.

Indicated on display

Fig. 108: VAG 1551 Scan Tool Display - Output Diagnostic Test Mode Initiating (3 Of 13)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

After pressing -Q- button, the following instrument functional checks are carried out.

- Tachometer needle moves over complete display range
- Speedometer needle moves over complete display range
- Coolant temperature needle moves over complete display range
- Fuel gauge needle moves over complete display range

NOTE:

- **On VDO instrument clusters, the instruments are activated simultaneously**
- **On MMO instrument clusters, the instruments are activated sequentially**

After all instrument display range checks, the following constant values are displayed:

Coolant temperature gauge: 90°C

Tachometer: 3000 rpm

Speedometer:100km/h (65 mph)

Fuel gauge:1/2

- Press --> button.

Indicated on display:

The warning lamps are activated and light continuously (includes all warning lamps for vehicle equipment having output DTM capability coded into the instrument cluster

- Press --> button.

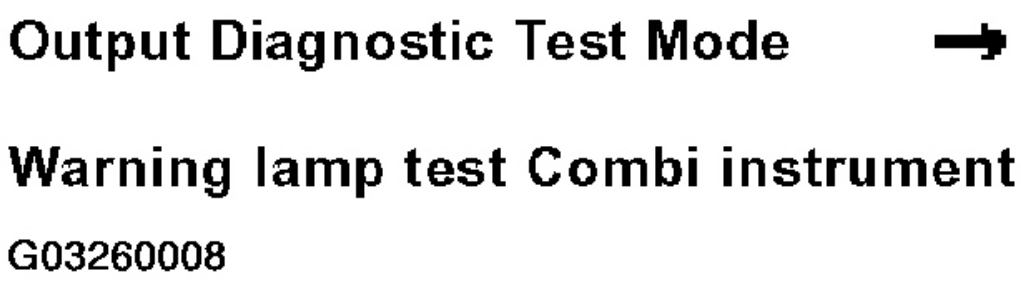


Fig. 109: VAG 1551 Scan Tool Display - Output Diagnostic Test Mode Initiating (4 Of 13)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

Seat belt warning lamp -K19- lights (when activated by code).

- Press --> button.

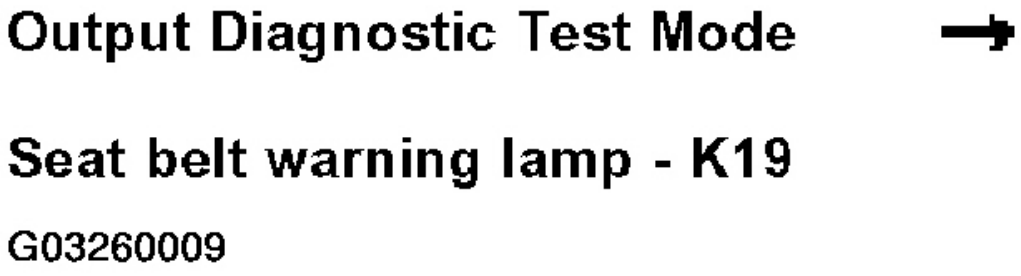


Fig. 110: VAG 1551 Scan Tool Display - Output Diagnostic Test Mode Initiating (5 Of 13)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

The buzzer/gong is activated and a warning tone is emitted at intervals.

- Press --> button.

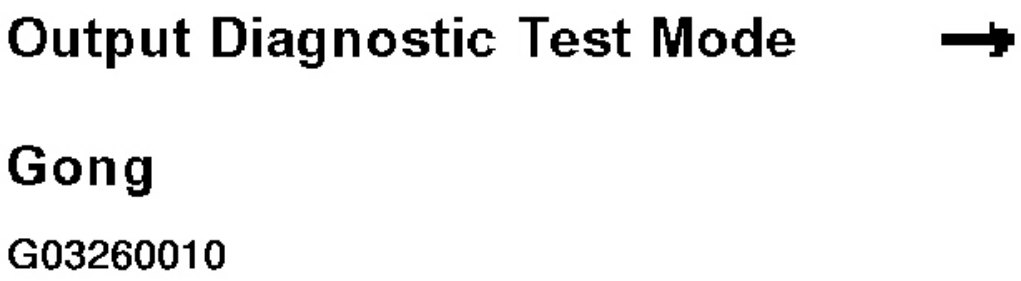


Fig. 111: VAG 1551 Scan Tool Display - Output Diagnostic Test Mode Initiating (6 Of 13)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

All liquid crystal segments in the speedometer display and tachometer are activated and appear on the display.

- Press --> button.

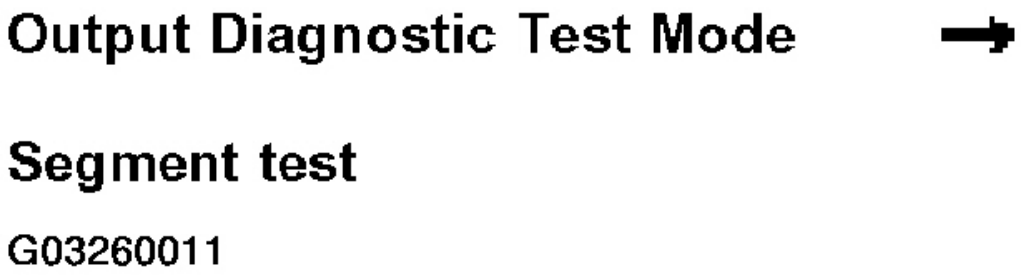


Fig. 112: VAG 1551 Scan Tool Display - Output Diagnostic Test Mode Initiating (7 Of 13)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

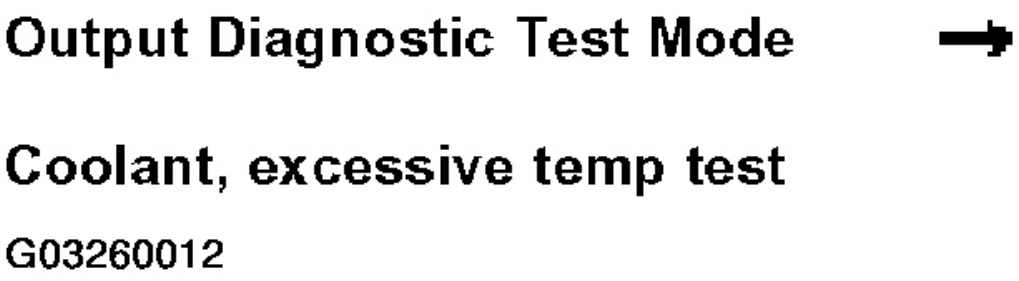


Fig. 113: VAG 1551 Scan Tool Display - Output Diagnostic Test Mode Initiating (8 Of 13)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

VDO Instrument cluster:

No display in instrument cluster!

High coolant temperature cut-out for the A/C clutch is activated approx. 5 seconds later.

MMO Instrument cluster:

Coolant temperature warning lamp lights and warning tone sounds.

High coolant temperature cut-out for the A/C clutch is activated approx. 5 seconds later.

- Press --> button.

Indicated on display for instrument clusters with manufacturer code MMO:

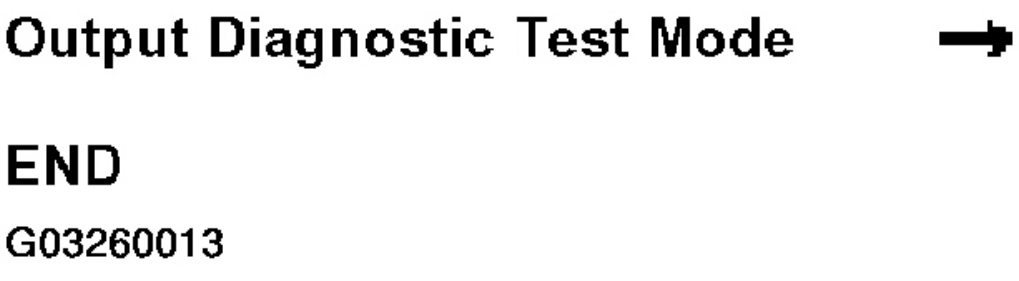


Fig. 114: VAG 1551 Scan Tool Display - Output Diagnostic Test Mode Initiating (9 Of 13)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display for instrument clusters with manufacturer code VDO:

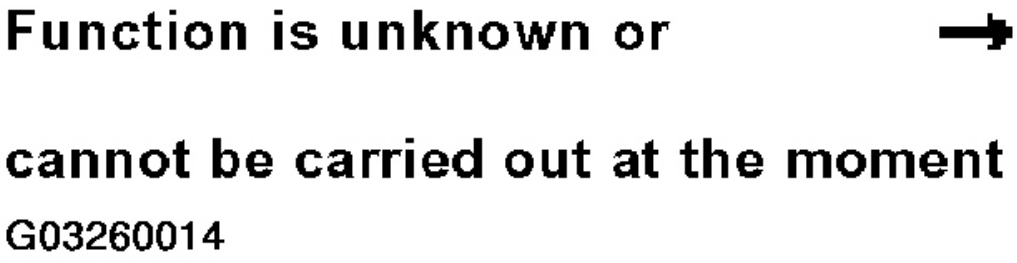


Fig. 115: VAG 1551 Scan Tool Display - Output Diagnostic Test Mode Initiating (10 Of 13)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

End Output Diagnostic Test Mode for VDO instrument clusters by pressing --> button.

All actual values are displayed again.

Indicated on display (select function):

- Press buttons -0- and -6- to select function 06 "End output".

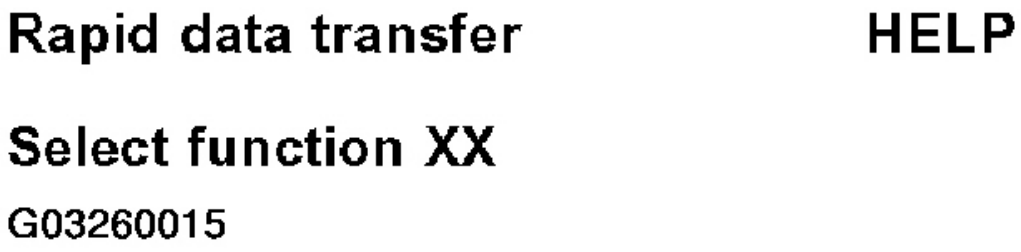


Fig. 116: VAG 1551 Scan Tool Display - Output Diagnostic Test Mode Initiating (11 Of 13)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Press -Q- button to confirm entry.

Fig. 117: VAG 1551 Scan Tool Display - Output Diagnostic Test Mode Initiating (12 Of 13)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

Tester is again in basic function.

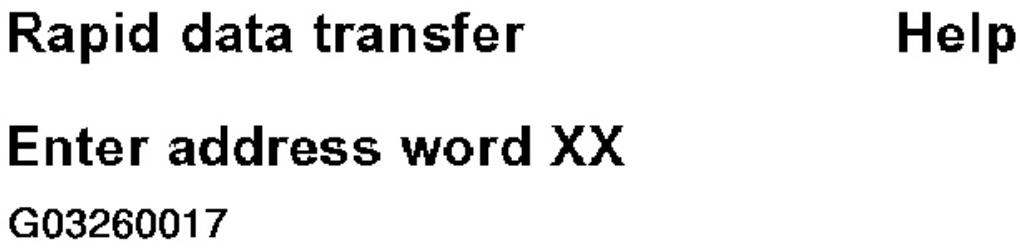


Fig. 118: VAG 1551 Scan Tool Display - Output Diagnostic Test Mode Initiating (13 Of 13)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

DIAGNOSTIC TROUBLE CODE (DTC) MEMORY, ERASING (FUNCTION 05)

NOTE: Erasing DTC memory (function 05) is only possible after checking DTC memory (function 02). If DTC memory cannot be erased, check DTC memory again and rectify indicated malfunctions.

Prerequisites

- Check DTC memory. See **Diagnostic Trouble Code (DTC) memory, checking (function 02)** .
- All malfunctions repaired.

After checking DTC memory:

Indicated on display (select function):

- Press buttons -0- and -5- to select function 05, "Erase DTC memory."

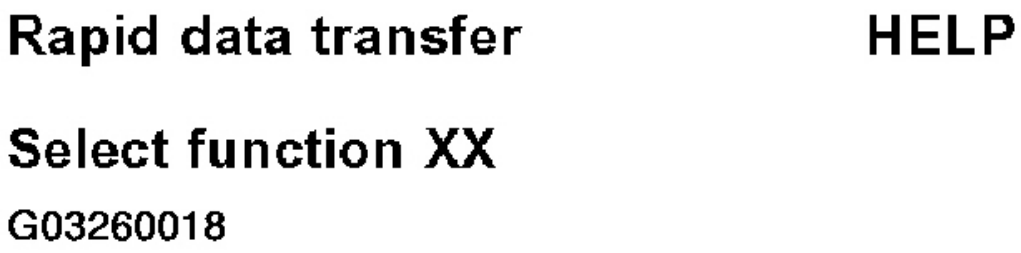


Fig. 119: VAG 1551 Scan Tool Display - Diagnostic Trouble Code Memory Erasing, From 06.99 & Up (1 Of 6)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Press -Q- button to confirm input.

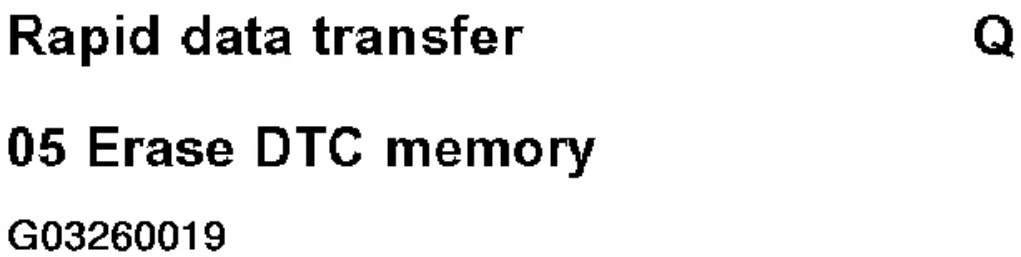


Fig. 120: VAG 1551 Scan Tool Display - Diagnostic Trouble Code Memory Erasing, From 06.99 & Up (2 Of 6)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display: (DTC memory is erased)

- Press --> button.

Fig. 121: VAG 1551 Scan Tool Display - Diagnostic Trouble Code Memory Erasing, From 06.99 & Up (3 Of 6)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display (select function):

- End output (function 06). See **End Output (function 06)** .

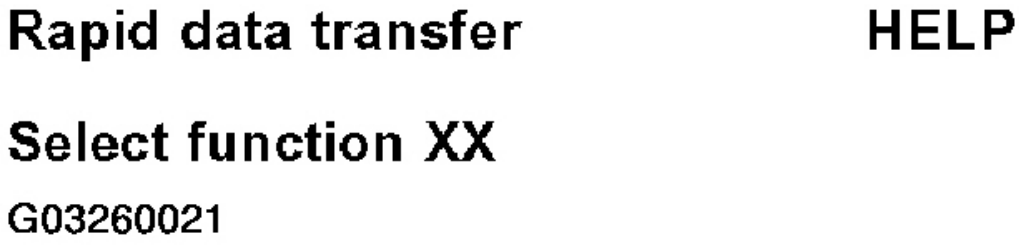


Fig. 122: VAG 1551 Scan Tool Display - Diagnostic Trouble Code Memory Erasing, From 06.99 & Up (4 Of 6)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

NOTE:

- **If this appears in the display, test sequence is faulty.**

Fig. 123: VAG 1551 Scan Tool Display - Diagnostic Trouble Code Memory Erasing, From 06.99 & Up (5 Of 6)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

- **If this appears in the display, test sequence is faulty.**

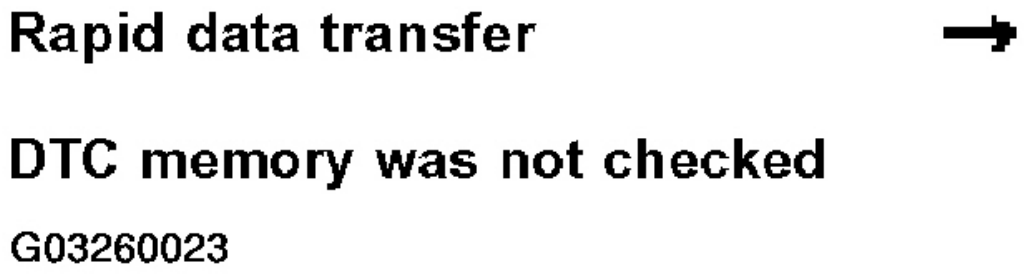


Fig. 124: VAG 1551 Scan Tool Display - Diagnostic Trouble Code Memory Erasing, From 06.99 & Up (6 Of 6)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Adhere exactly to test sequence: First check DTC memory, repair malfunctions if necessary, then erase.

END OUTPUT (FUNCTION 06)

- Press buttons -0- and -6- to select function "End output."

Indicated on display:

- Press -Q- button to confirm input.

Fig. 125: VAG 1551 Scan Tool Display - End Output, From 06.99 & Up (1 Of 2)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Switch off ignition.
- Disconnect VAG 1551 Scan Tool (ST) from Data Link Connector (DLC).

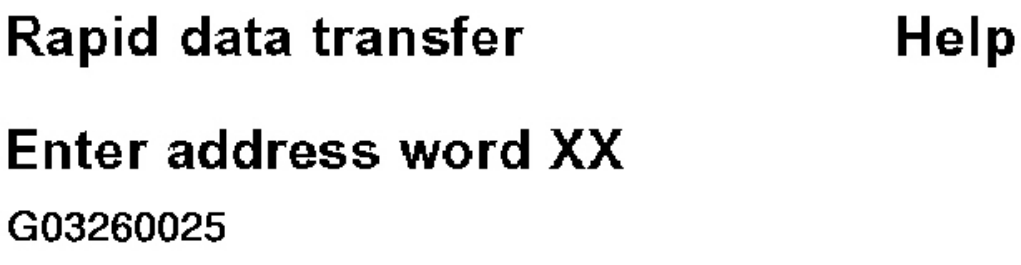


Fig. 126: VAG 1551 Scan Tool Display - End Output, From 06.99 & Up (2 Of 2)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

INSTRUMENT CLUSTER UP TO 10.00 MODELS, CODING (FUNCTION 07)

Use this function to code the control module with indicator unit in instrument cluster -J285- with the following information:

- Available equipment

- Market version
- Code number for service intervals
- Code number for distance impulse number ("K" number)

Coding

- Connect VAG 1551 scan tool (ST), select operating mode 1 "Rapid data transfer", switch on ignition and input address word 17 "Instrument cluster".

After control module identification and immobilizer identification number are displayed:

- Press --> button.

Indicated on display:

- Press buttons -0- and -7- to select function 07 "Code control module".

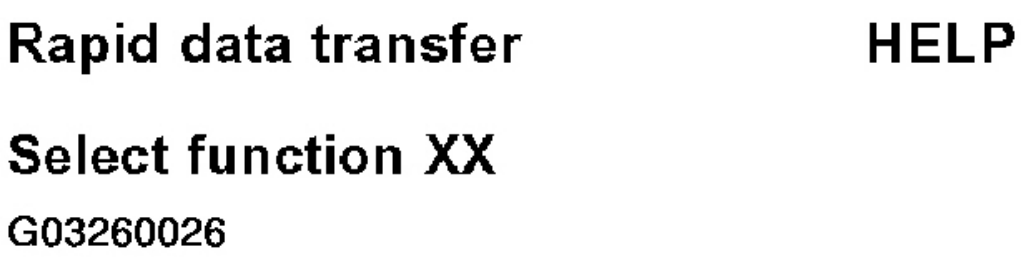


Fig. 127: VAG 1551 Scan Tool Display - Instrument Cluster Coding, Up To 10.00 Models (1 Of 8)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Press -Q- button to confirm input.

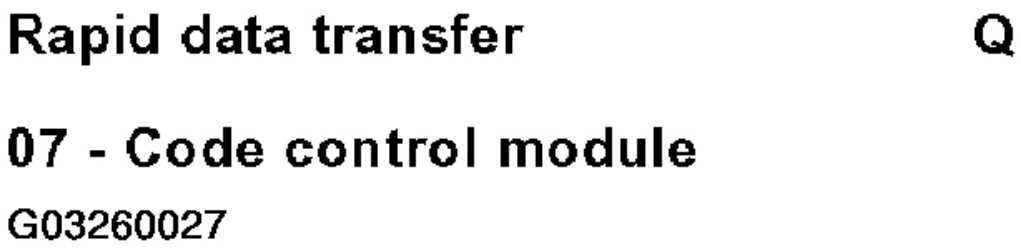


Fig. 128: VAG 1551 Scan Tool Display - Instrument Cluster Coding, Up To 10.00 Models (2 Of 8)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Confirm applicable available equipment, model and service interval particulars, determine and enter code number from code table. See **INSTRUMENT CLUSTER CODE TABLE (UP TO 10.00 MODELS)** .

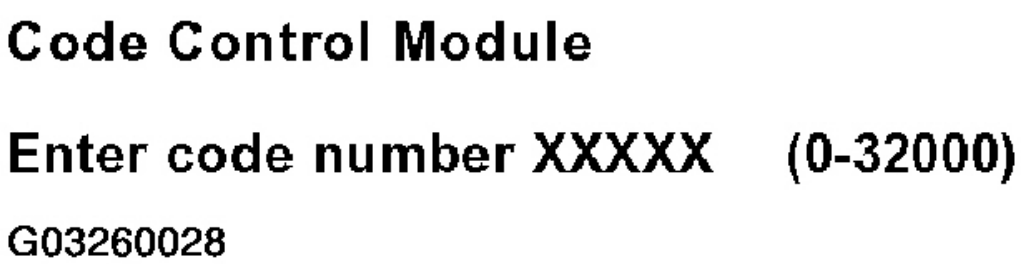


Fig. 129: VAG 1551 Scan Tool Display - Instrument Cluster Coding, Up To 10.00 Models (3 Of 8)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Coding example:

03 Code number for vehicle options

2 Code number for country version

0 Code number for service intervals

2 Code number for distance impulse number (K-number)

INSTRUMENT CLUSTER CODE

Code	Place In Code	Designation
	1st & 2nd Digits	**Available equipment(1)**
00	1st & 2nd Digits	No optional equipment active
01	1st & 2nd Digits	Brake pad wear indicator active
02	1st & 2nd Digits	Seat belt warning active
04	1st & 2nd Digits	Rear spoiler
	3rd Digit	**Market version**
2	3rd Digit	USA (US)
3	3rd Digit	Canada (CDN)
	4th Digit	**Code number for service intervals**
	0	Fixed USA/CDN service intervals - without oil level thermal sensor -G266- installed
	2	Fixed USA/CDN service intervals - with oil level thermal sensor -G266- installed
	5th Digit	**Code number for trip impulse number (K-number)** 3528

(1) If more than one type of available equipment is to be entered, then the code numbers must be added together. Example: Brake pad wear indicator & seat belt warning: 01 + 02 = 03.

NOTE:

- **The distance impulse number is a constant used to calculate speed and distance travelled.**
- **The distance impulse number (K number) can be read using function 10 "Adaptation". See Distance impulse number (K number), reading .**

Indicated on display:

- Press -Q- button to confirm input.

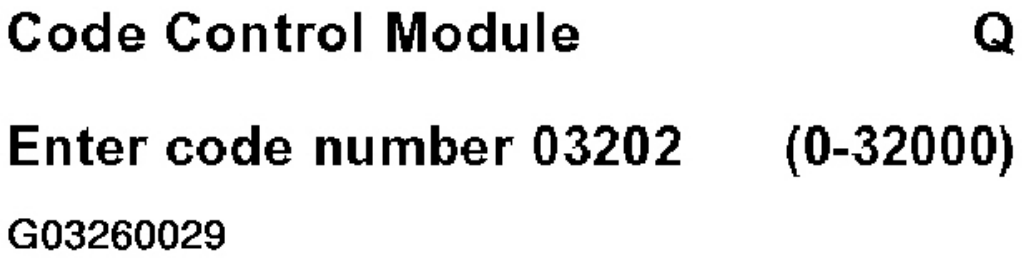


Fig. 130: VAG 1551 Scan Tool Display - Instrument Cluster Coding, Up To 10.00 Models (4 Of 8)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display (example only):

- Press --> button.

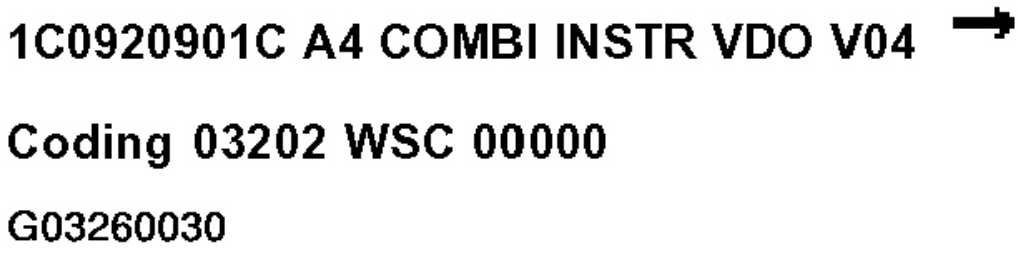


Fig. 131: VAG 1551 Scan Tool Display - Instrument Cluster Coding, Up To 10.00 Models (5 Of 8)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Press --> button.

Fig. 132: VAG 1551 Scan Tool Display - Instrument Cluster Coding, Up To 10.00 Models (6 Of 8)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display (select function)

Ending function:

- Press buttons -0- and -6- to select function 06 "End output".

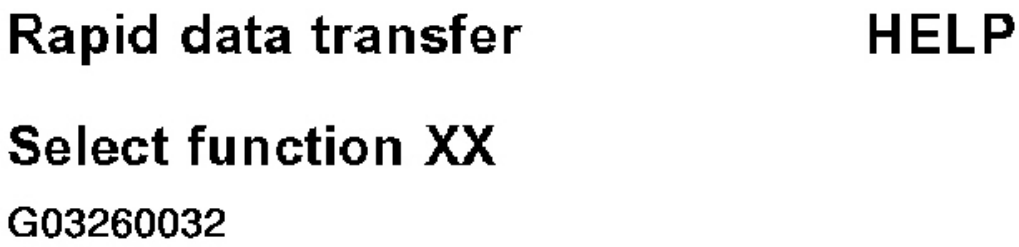


Fig. 133: VAG 1551 Scan Tool Display - Instrument Cluster Coding, Up To 10.00 Models (7 Of 8)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Press -Q- button to confirm input.

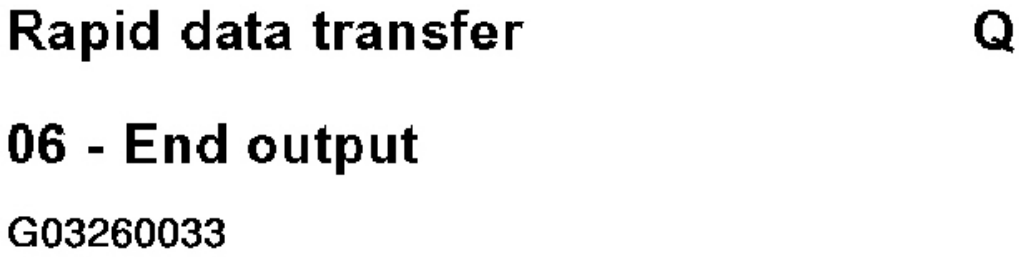


Fig. 134: VAG 1551 Scan Tool Display - Instrument Cluster Coding, Up To 10.00 Models (8 Of 8)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

INSTRUMENT CLUSTER FROM 10.00 MODELS, CODING (FUNCTION 07)

Use this function to code the control module with indicator unit in instrument cluster -J285- with the following information:

- Available equipment
- Market version
- Code number for service intervals
- Code number for distance impulse number ("K" number)

Coding

- Connect VAG 1551 scan tool (ST), select operating mode 1 "Rapid data transfer", switch on ignition and input address word 17 "Instrument cluster".

After control module identification and immobilizer identification number are displayed:

- Press --> button.

Indicated on display:

- Press buttons -0- and -7- to select function 07 "Code control module".

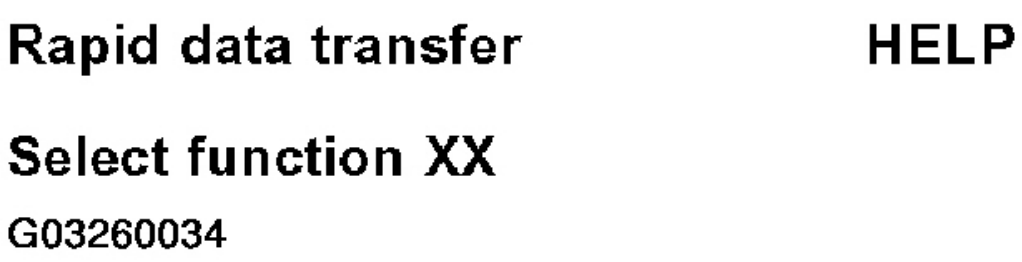


Fig. 135: VAG 1551 Scan Tool Display - Instrument Cluster Coding, From 10.00 Models (1 Of 8)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Press -Q- button to confirm input.

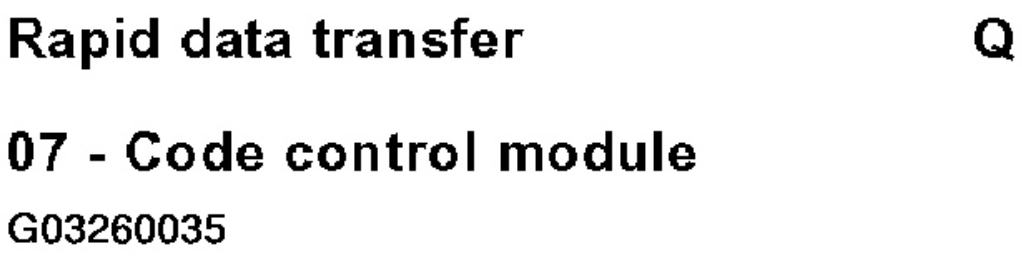


Fig. 136: VAG 1551 Scan Tool Display - Instrument Cluster Coding, From 10.00 Models (2 Of 8)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Confirm applicable available equipment, model and service interval particulars, determine and enter code number from code table. See **INSTRUMENT CLUSTER CODE TABLE (FROM 10.00 MODELS)** .

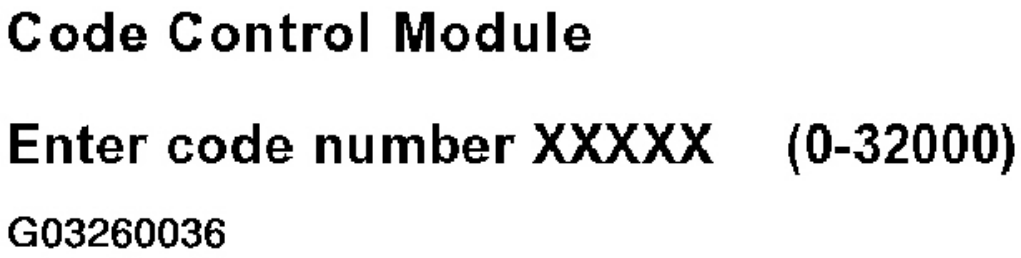


Fig. 137: VAG 1551 Scan Tool Display - Instrument Cluster Coding, From 10.00 Models (3 Of 8)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Coding example:

03 Code number for vehicle options

2 Code number for country version

3 Code number for service intervals

2 Code number for distance impulse number (K-number)

INSTRUMENT CLUSTER CODE (FROM 10.00 MODELS)

Code	Place In Code	Designation
	1st & 2nd Digits	**Available equipment(1)**
00	1st & 2nd Digits	no optional equipment active
01	1st & 2nd Digits	Brake pad wear indicator active
02	1st & 2nd Digits	Seat belt warning active
04	1st & 2nd Digits	Rear spoiler
	3rd Digit	**Market version**
2	3rd Digit	USA (US)
3	3rd Digit	Canada (CDN)

	4th Digit	**Code number for service intervals**
0	4th Digit	Fixed USA/CDN service intervals - without oil level thermal sensor -G266- installed
2	4th Digit	Fixed USA/CDN service intervals - with oil level thermal sensor -G266- installed
3	4th Digit	Vehicles without service interval display - USA/CDN)
	5th Digit	**Code number for trip impulse number (K-number)** 3528
(1) If more than one type of available equipment is to be entered, then the code numbers must be added together. Example: Brake pad wear indicator & seat belt warning: 01 + 02 = 03.		

NOTE:

- **The distance impulse number is a constant used to calculate speed and distance travelled.**
- **The distance impulse number (K number) can be read using function 10 "Adaptation", See Distance impulse number (K number), reading .**

Indicated on display:

- Press -Q- button to confirm input.

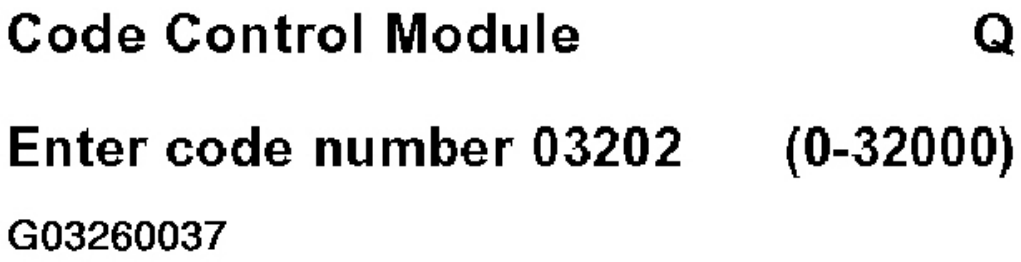


Fig. 138: VAG 1551 Scan Tool Display - Instrument Cluster Coding, From 10.00 Models (4 Of 8)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display (example only):

- Press --> button.

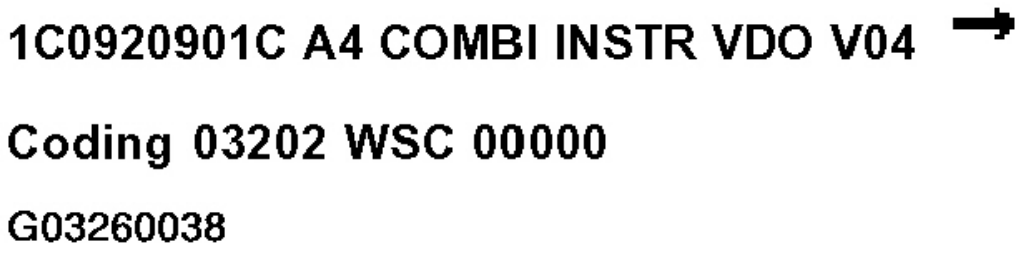


Fig. 139: VAG 1551 Scan Tool Display - Instrument Cluster Coding, From 10.00 Models (5 Of 8)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Press --> button.

Fig. 140: VAG 1551 Scan Tool Display - Instrument Cluster Coding, From 10.00 Models (6 Of 8)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display (select function)

Ending function:

- Press buttons -0- and -6- to select function 06 "End output".

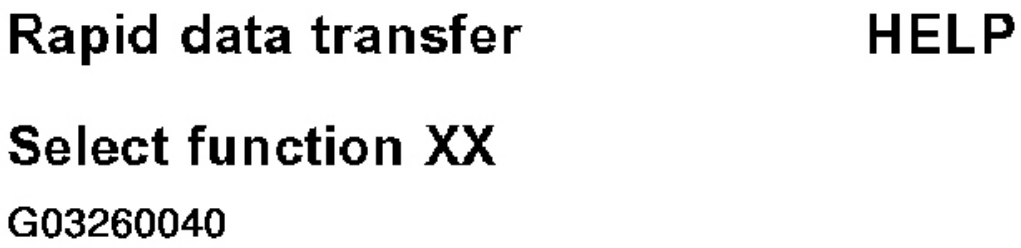


Fig. 141: VAG 1551 Scan Tool Display - Instrument Cluster Coding, From 10.00 Models (7 Of 8)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Press -Q- button to confirm input.

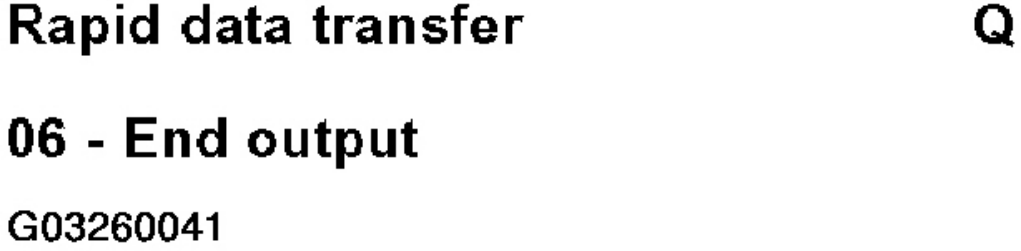


Fig. 142: VAG 1551 Scan Tool Display - Instrument Cluster Coding, From 10.00 Models (8 Of 8)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

READ MEASURING VALUE BLOCK (FUNCTION 08)

The measuring value block is divided into 4 display groups. The assignment of the individual display fields can be taken from the display group overview. See **Display groups, interpreting** .

Use this function to observe various instrument cluster inputs.

- Connect VAG 1551 Scan Tool (ST), select operating mode 1 "Rapid data transfer", switch on ignition and input address word 17 "Instrument cluster".

After control module identification and immobilizer identification number are displayed:

- Press --> button.

Indicated on display:

- Press buttons -0- and -8- to select function 08 "Read measuring value block".

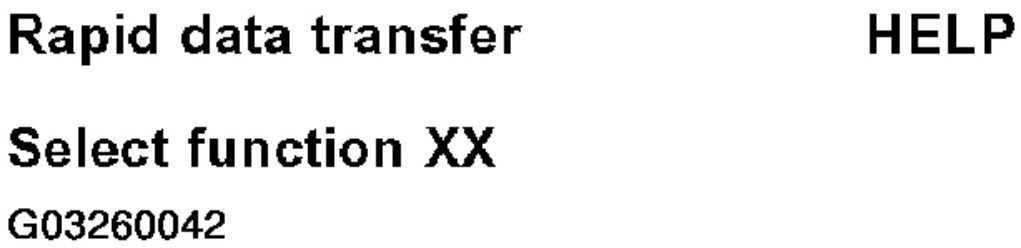


Fig. 143: VAG 1551 Scan Tool Display - Read Measuring Value Block, From 06.99 & Up (1 Of 5)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Press -Q- button to confirm input.

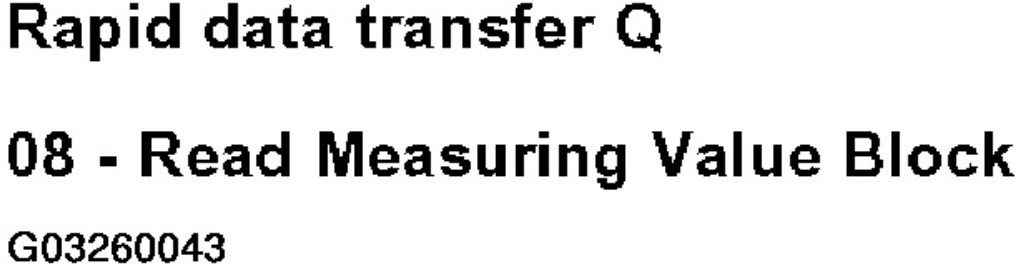


Fig. 144: VAG 1551 Scan Tool Display - Read Measuring Value Block, From 06.99 & Up (2 Of 5)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Using the Scan Tool (ST) button pad, enter required display group number (following example shows display group 001). Press keys 0, 0 and 1 for "Display group number 1" and press -Q- button to confirm input.

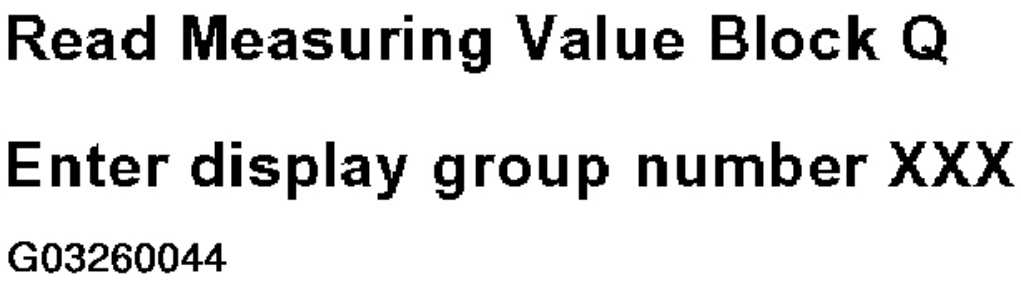


Fig. 145: VAG 1551 Scan Tool Display - Read Measuring Value Block, From 06.99 & Up (3 Of 5)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display: (1 ... 4 = Display zones)

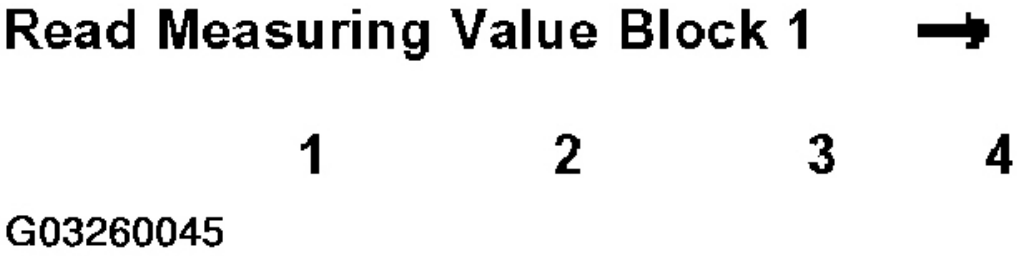


Fig. 146: VAG 1551 Scan Tool Display - Read Measuring Value Block, From 06.99 & Up (4 Of 5)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

NOTE:

- **Interpreting display groups and evaluating measured values in individual display fields. See Display groups, interpreting .**
- **With printer switched on, information on display is printed out.**
- **To easily change between display groups, proceed as follows:**

DISPLAY GROUPS VAG 1551 AND 1552

Display group	VAG 1551	VAG 1552
Higher	Press button 3	Press --> button
Lower	Press button 1	Press --> button
Skip	Press button C	Press button C

- Displayed after pressing -C- button.

Indicated on display:

- Enter display group number as needed tables beginning, See **Display groups, interpreting** .

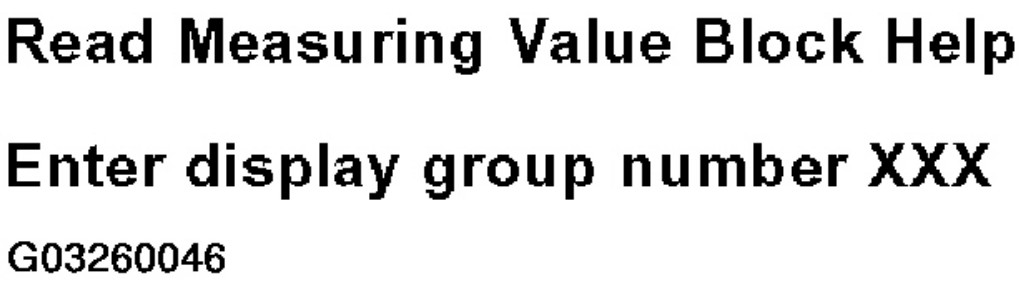


Fig. 147: VAG 1551 Scan Tool Display - Read Measuring Value Block, From 06.99 & Up (5 Of 5)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

NOTE:

- **Display fields always show actual values transmitted from senders and sensors. However, instrument cluster display values can differ from those in the display fields due to internal filtering.**
- **Other display groups are possible, but are not required for On Board Diagnostic program!**

DISPLAY GROUPS, INTERPRETING

Display group 001

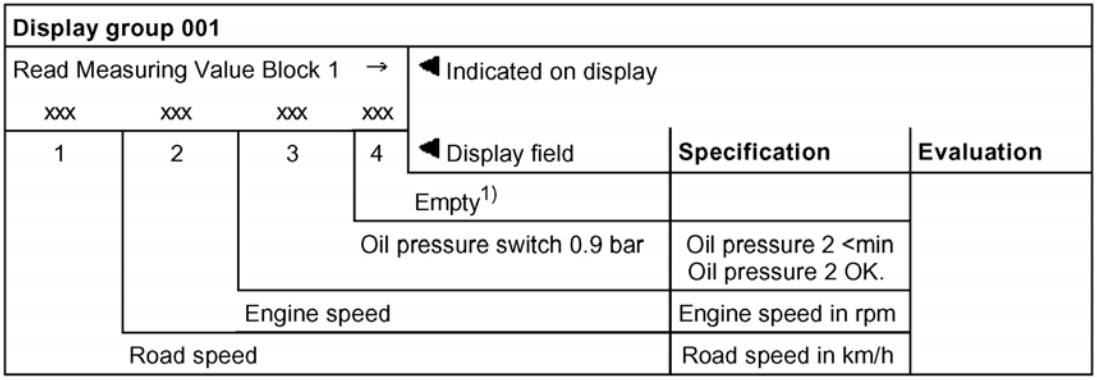


Fig. 148: Display Group 001, From 06.99 & Up
Courtesy of VOLKSWAGEN OF AMERICA, INC.

NOTE: For evaluation of Fig. 148 , see Evaluating display group number 001 .

Evaluating display group number 001

EVALUATING DISPLAY GROUP NUMBER 001 (FROM 06.99 & UP)

Display field	Description	Display	Corrective Action
1	Speed signal	Speed in km/h	• Perform visual check of wiring and connections • Check wiring and connections of affected circuit for correct connection and tight fit while simultaneously observing display. • If display does not change after checking connections, troubleshoot wiring using wiring diagram • Replace relevant component, if necessary. • Erase DTC memory. • Perform functional check • Check DTC memory again.
2	Engine speed	Engine speed in rpm	
3	Oil pressure switch 0.9 bar	Oil pressure 2< min. Oil pressure 2 OK.	

Display group 002

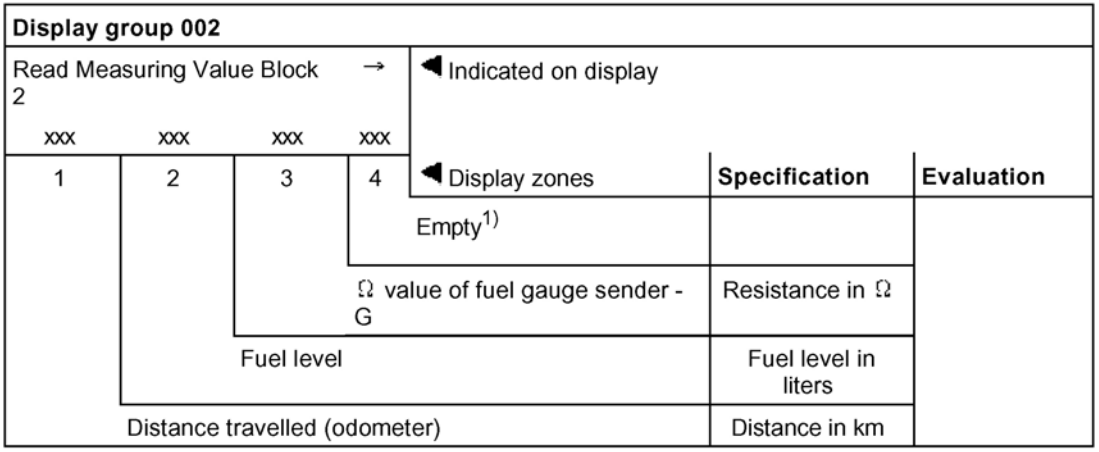


Fig. 149: Display Group 002, From 10.00 Models
Courtesy of VOLKSWAGEN OF AMERICA, INC.

NOTE: For evaluation of Fig. 149 , see Evaluating display group number 002 .

Evaluating display group number 002

EVALUATING DISPLAY GROUP NUMBER 002 (FROM 10.00 MODELS)

Display field	Description	Display	Corrective Action
1	Distance travelled (odometer)	Distance in km	• Perform visual check of wiring and connections • Check wiring and connections of affected circuit for correct connection and tight fit while simultaneously observing display • If display does not change after checking connections, troubleshoot wiring using wiring diagram. • Replace relevant component, if necessary. • Erase DTC memory • Perform functional check • Check DTC memory again
2	Fuel level(1)	Fuel level in liters	
3	ohm value of fuel gauge sender -G	Resistance in ohm	

(1) For an open circuit of the fuel level sender, "0L" is displayed in field 2 and 510 ohm is displayed in field 3. For a short circuit of the fuel level sender, "0L" is displayed in field 2 and 0 ohm is displayed in field 3.

Display group 003

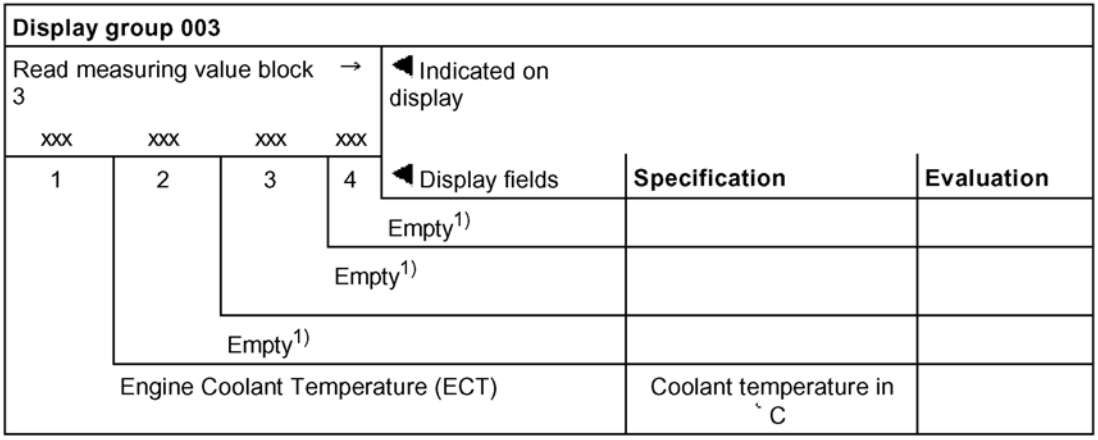


Fig. 150: Display Group 003, From 10.00 Models
Courtesy of VOLKSWAGEN OF AMERICA, INC.

NOTE: For evaluation of Fig. 150 , see Evaluating display group number 003 .

Evaluating display group number 003

EVALUATING DISPLAY GROUP NUMBER 003 (FROM 10.00 MODELS)

Display field	Description	Display	Corrective Action
1	Engine Coolant Temperature (ECT)(1)	ECT in ° C	• Perform visual check of wiring and connections • Check wiring and connections of affected circuit for correct connection and tight fit while simultaneously observing display • If display does not change after checking connections, troubleshoot wiring using wiring diagram • Replace relevant component if necessary • Erase DTC memory • Perform functional check • Check DTC memory again
(1) The coolant temperature value steadily indicates 90° C (194 °F) whenever the actual coolant temperature varies between approx. 75°C (167°F) and 107°C (225 °F).			

Display Group 050

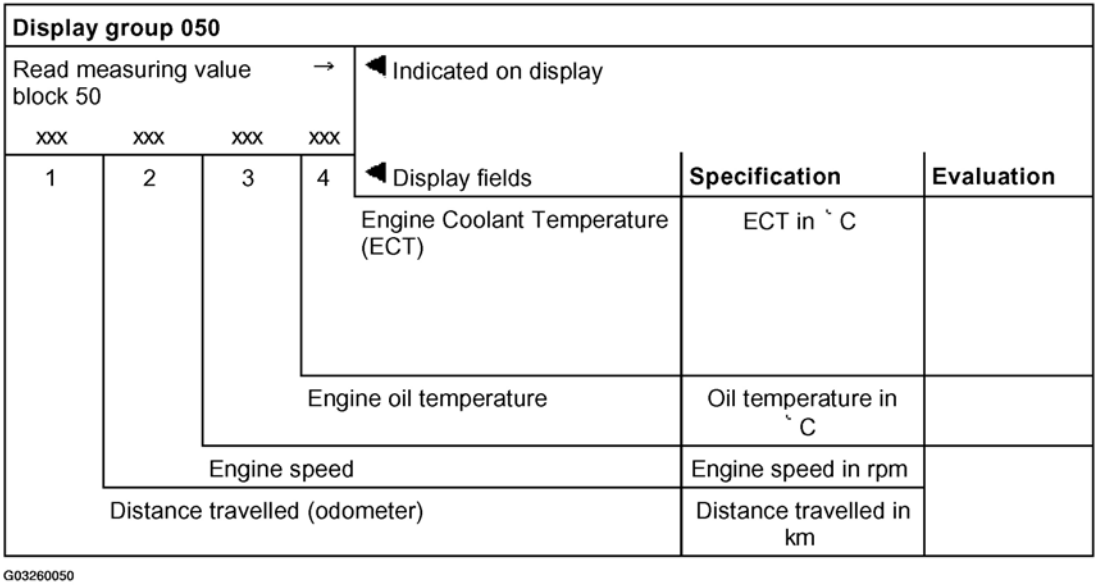


Fig. 151: Display Group 050, From 10.00 Models
Courtesy of VOLKSWAGEN OF AMERICA, INC.

NOTE: For evaluation of Fig. 151 , see Evaluating display group number 050 .

Evaluating display group number 050

EVALUATING DISPLAY GROUP NUMBER 050 (FROM 10.00 MODELS)

Display field	Description	Display	Corrective Action
1	Distance travelled	Distance travelled in km	• Perform visual check of wiring and connections • Check wiring and connections of affected circuit for correct connection and tight fit while simultaneously observing display • If display does not change after checking connections, troubleshoot wiring using wiring diagram • Replace relevant component, if necessary • Erase DTC memory • Perform functional check • Check DTC memory again
2	Engine speed	Engine speed in rpm	
3	Oil temperature	Oil temperature in °C	
4	Coolant temperature	Coolant temperature in ° C	

ADAPTATION (FUNCTION 10)

Use this function to initiate and store the following changes:

- Adaptation of odometer reading when replacing/exchanging instrument cluster

- Adaptation of fuel gauge reading
- Adaptation of fuel consumption indicator (MFI)

Individual functions are called up using the appropriate adaptation channel number from adaptation table. See **ADAPTATION TABLE (FROM 10.00 MODELS)** .

Adaptation table:

ADAPTATION

Adaptation channel	**Adaptation functions**
09	Odometer, adaptation, See **Odometer, adaptation**
16	Distance impulse number (K number): Read only, cannot be changed, See **Distance impulse number (K number), reading**
30	Fuel gauge, checking (adaptation), See **Fuel gauge, checking (adaptation)**

NOTE: After changing an adaptation value or ending an adaptation channel the function "10 - adaptation" must be performed to select another adaptation channel!

ODOMETER, ADAPTATION

NOTE:

- **Total distance travelled by the vehicle can be read from the malfunctioning instrument cluster or determined by vehicle service history.**
- **Total distance travelled display of new instrument cluster must not be more than 100 km (63 mi) before adaptation.**
- **Total distance travelled to be transferred to the new instrument cluster must exceed 100 km (63 mi).**
- **Adapting total distance travelled is only possible once and only in a positive (upwards) direction.**
- **Adaptation can be interrupted with the "C" button of the VAG 1551/1552 Scan Tool (ST)**
- **Correcting a false entry which has been confirmed is not possible. The instrument cluster must be exchanged for a new one.**
- **For US models, the country code must first be changed to "Canada" before entering the adaptation value.**
- **Adaptation value on instrument clusters must be entered in kilometers. For US models, adaptation value must be converted from miles to kilometers first (miles x 1.609 = kilometers).**

Example:

The malfunctioning instrument cluster has an odometer display of 89627 (either kilometers or miles). The

odometer display can be transferred to the new instrument cluster as follows:

- Connect VAG 1551 Scan Tool (ST), select 1 "Rapid Data Transfer", switch on ignition, input address word 17 "Instrument cluster".
- Press -Q- button to confirm input.

Various data appears in the display. The manufacturer's code is also displayed.

NOTE: US vehicles from 1999 m.y. must temporarily be changed to "Canada". See INSTRUMENT CLUSTER UP TO 10.00 MODELS, CODING (FUNCTION 07) .

Indicated on display:

- Press button -1- twice to select "Login Procedure" function 11
- Press -Q- button to confirm input.

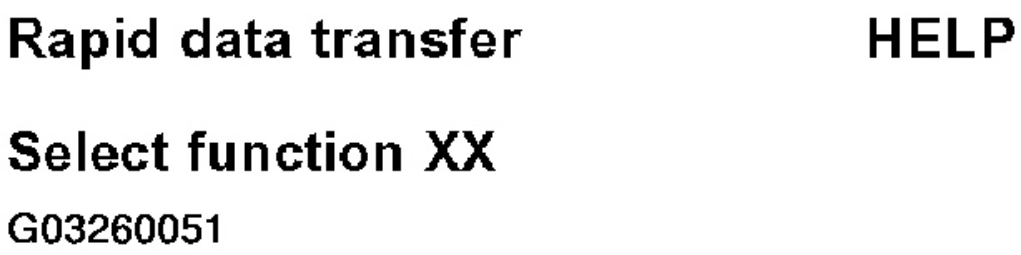


Fig. 152: VAG 1551 Scan Tool Display - Odometer Adaptation, From 10.00 Models (1 Of 26)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Press -Q- button to confirm input.

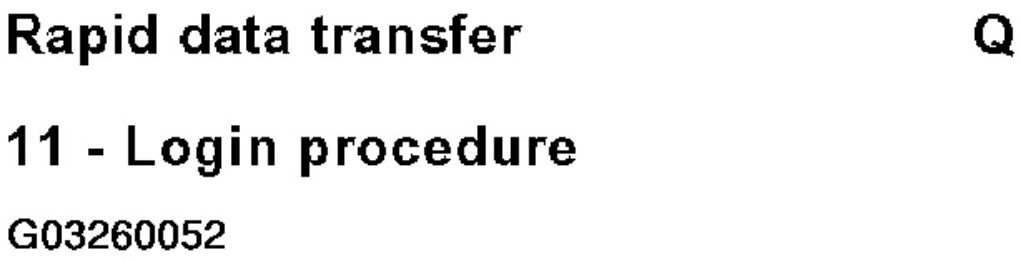


Fig. 153: VAG 1551 Scan Tool Display - Odometer Adaptation, From 10.00 Models (2 Of 26)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Input code number 13861.

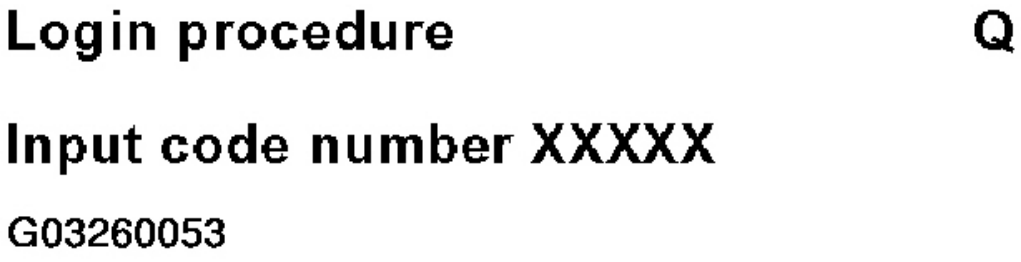


Fig. 154: VAG 1551 Scan Tool Display - Odometer Adaptation, From 10.00 Models (3 Of 26)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

If a wrong code is entered, "FAIL" appears in odometer display.

In this case, battery terminal 30 must be disconnected and reconnected and the login procedure repeated using the correct code.

- Press -Q- button to confirm input.

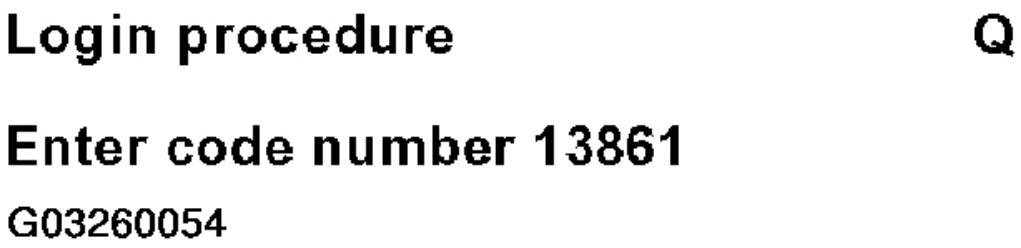


Fig. 155: VAG 1551 Scan Tool Display - Odometer Adaptation, From 10.00 Models (4 Of 26)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display (select function):

- Press buttons -1- and -0- to select function 10, "Adaptation".

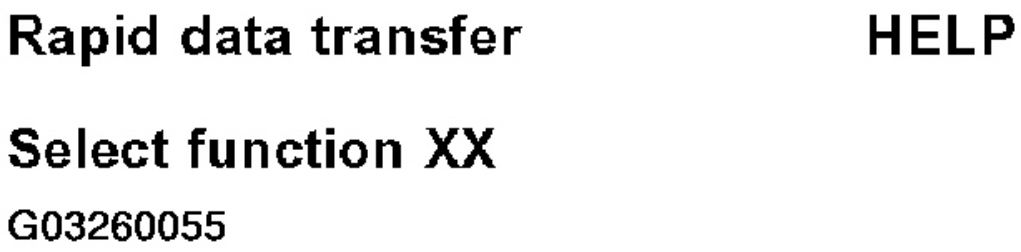


Fig. 156: VAG 1551 Scan Tool Display - Odometer Adaptation, From 10.00 Models (5 Of 26)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Press -Q- button to confirm input.

Fig. 157: VAG 1551 Scan Tool Display - Odometer Adaptation, From 10.00 Models (6 Of 26)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Press buttons -0- and -9- to select channel 09.

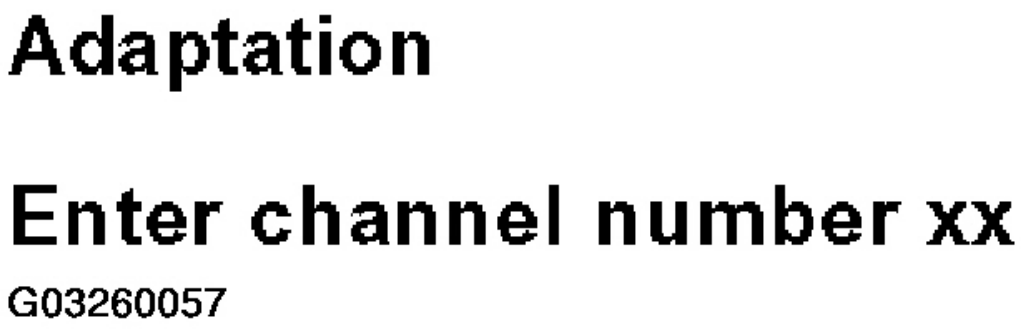


Fig. 158: VAG 1551 Scan Tool Display - Odometer Adaptation, From 10.00 Models (7 Of 26)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Press -Q- button to confirm input.

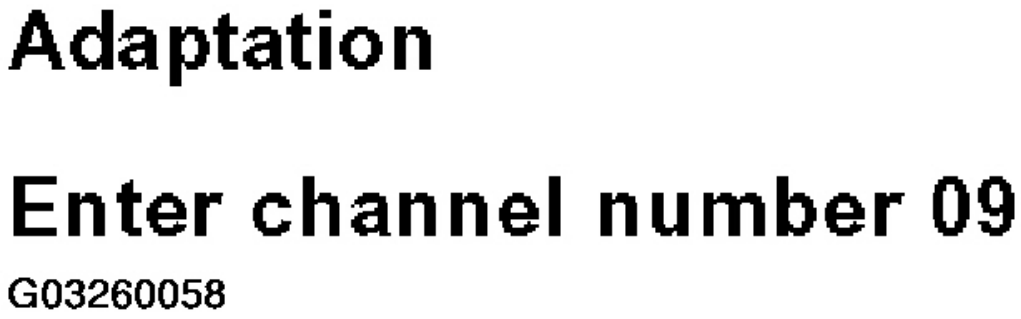


Fig. 159: VAG 1551 Scan Tool Display - Odometer Adaptation, From 10.00 Models (8 Of 26)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

- Indicated on display:
- Move forward in program by pressing --> button.

Fig. 160: VAG 1551 Scan Tool Display - Odometer Adaptation, From 10.00 Models (9 Of 26)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Input adaptation value (odometer reading) using VAG 1551/1552 button pad.

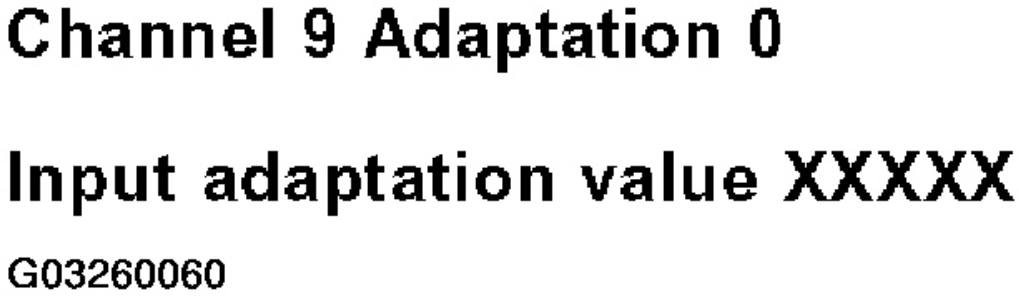


Fig. 161: VAG 1551 Scan Tool Display - Odometer Adaptation, From 10.00 Models (10 Of 26)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

The last position of the odometer reading must be rounded off to the nearest 10.

For US models, first convert miles to kilometers (e.g., 55704 mi X 1.609 = 89627 km)

An odometer reading of 89627 kilometers produces an adaptation value of: *08963*

ODOMETER ADAPTATION CHART

X	-	-	-	-	Hundred thou.: 100000 ... 655350 km
-	X	-	-	-	Ten thousands: 10000 ... 90000 km
-	-	X	-	-	Thousands: 1000 ... 9000 km
-	-	-	X	-	Hundreds: 100 ... 900 km
-	-	-	-	X	Tens: 10 ... 90 km
-	-	-	-	-	Ones: round up to next ten

- Input adaptation value using VAG 1551/1552 button pad.

Indicated on display:

- Press -Q- button to confirm input.

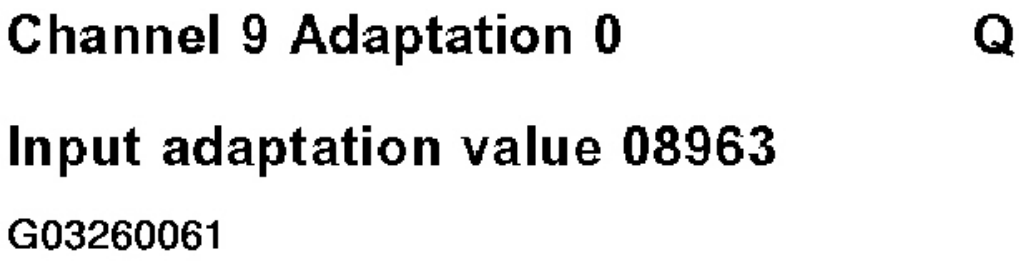


Fig. 162: VAG 1551 Scan Tool Display - Odometer Adaptation, From 10.00 Models (11 Of 26)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Press -Q- button to confirm input.

Fig. 163: VAG 1551 Scan Tool Display - Odometer Adaptation, From 10.00 Models (12 Of 26)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

If adaptation value is not correct, e.g. a false entry:

- **Press -C- button to input correct value .**
- **Press -Q- button to confirm input .**

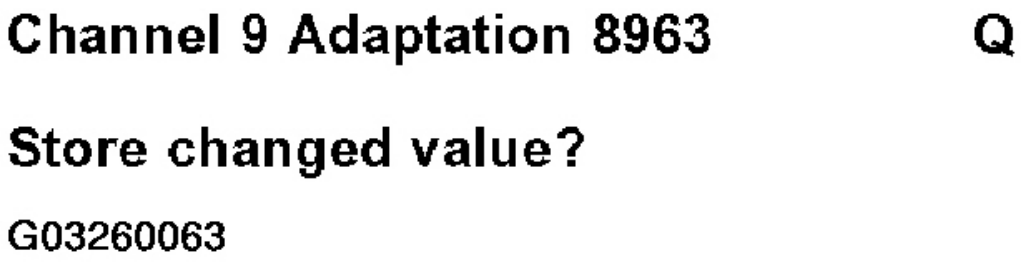


Fig. 164: VAG 1551 Scan Tool Display - Odometer Adaptation, From 10.00 Models (13 Of 26)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Press --> button to complete adaptation sequence.

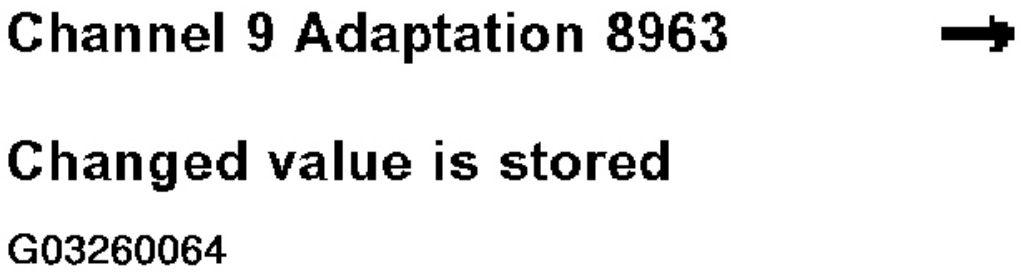


Fig. 165: VAG 1551 Scan Tool Display - Odometer Adaptation, From 10.00 Models (14 Of 26)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

NOTE:

- **For Canadian vehicles, the procedure is now complete.**
- **For US vehicles, instrument clusters must now be returned from kilometers to miles (change country code), See INSTRUMENT CLUSTER UP TO 10.00 MODELS, CODING (FUNCTION 07) .**

Indicated on display (select function):

- Press buttons -0- and -6- to select function 06 "End output".

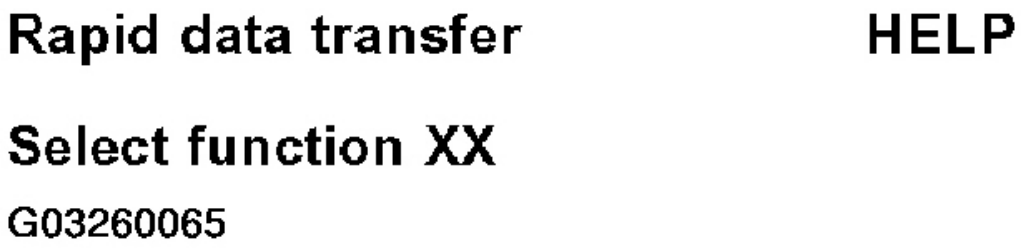


Fig. 166: VAG 1551 Scan Tool Display - Odometer Adaptation, From 10.00 Models (15 Of 26)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Press -Q- button to confirm input.

Fig. 167: VAG 1551 Scan Tool Display - Odometer Adaptation, From 10.00 Models (16 Of 26)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

The scan tool returns to the start of the program sequence.

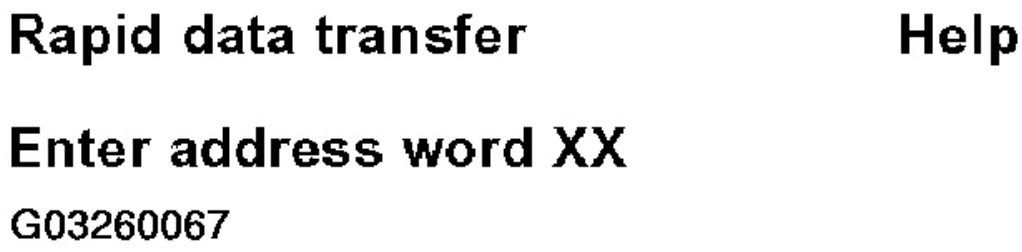


Fig. 168: VAG 1551 Scan Tool Display - Odometer Adaptation, From 10.00 Models (17 Of 26)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Distance impulse number (K number), reading

The distance impulse number is a constant used by the instrument cluster to calculate speed and distance travelled.

NOTE:

- **The distance impulse number (K number) is preset from the manufacturer and cannot be changed.**
- **To change the distance travelled number, a code number corresponding to the vehicle engine/gearbox combination must be entered using function 07 "Code Control Module". See INSTRUMENT CLUSTER UP TO 10.00 MODELS, CODING (FUNCTION 07) .**
- **For instrument clusters with a display in miles, the distance impulse number will still be displayed for kilometers.**
- **Distance impulse number for miles can be converted to kilometers (Distance impulse number for kilometers x 1.609 = distance impulse number for miles).**
- **Interrupt reading of distance impulse number by pressing C button on VAG 1551.**

- Connect scan tool VAG 1551, select operating mode 1 "Rapid data transfer", switch on ignition and enter address word 17 "Instrument cluster".

After control module identification and immobilizer identification number are displayed:

- Press -Q- button to confirm input.

Indicated on display (select function):

- Press buttons -1- and -0- to select function 10 "Adaptation".

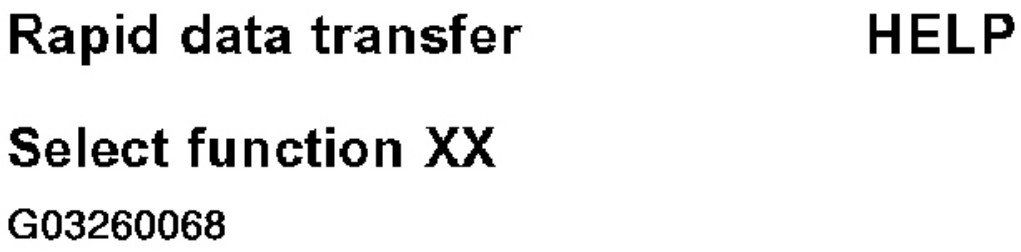


Fig. 169: VAG 1551 Scan Tool Display - Odometer Adaptation, From 10.00 Models (18 Of 26)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Press -Q- button to confirm input.

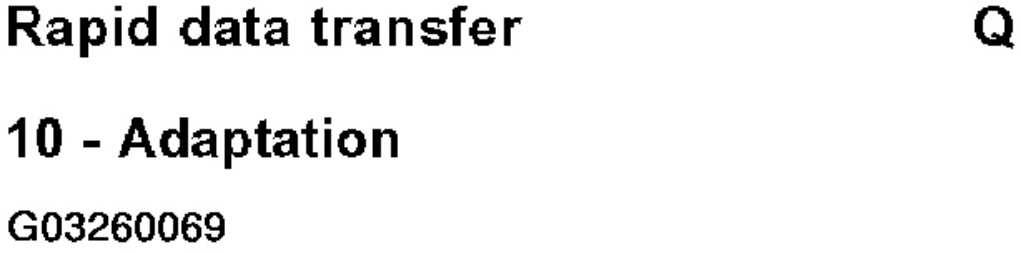


Fig. 170: VAG 1551 Scan Tool Display - Odometer Adaptation, From 10.00 Models (19 Of 26)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Press buttons -1- and -6- to select channel 16.

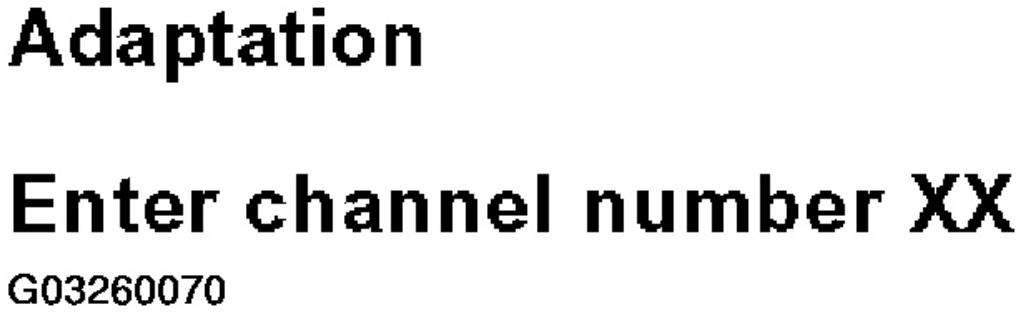


Fig. 171: VAG 1551 Scan Tool Display - Odometer Adaptation, From 10.00 Models (20 Of 26)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Press -Q- button to confirm input.

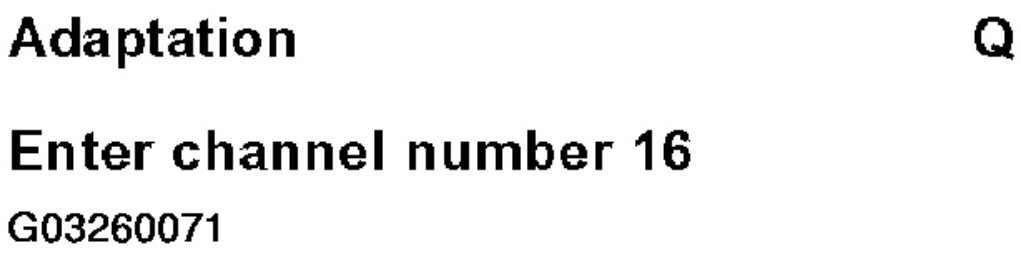


Fig. 172: VAG 1551 Scan Tool Display - Odometer Adaptation, From 10.00 Models (21 Of 26)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Compare distance impulse number for vehicle engine/gearbox combination with table. See **INSTRUMENT CLUSTER CODE TABLE (UP TO 10.00 MODELS)** .
- Interrupt reading of distance impulse number by pressing -C- button.

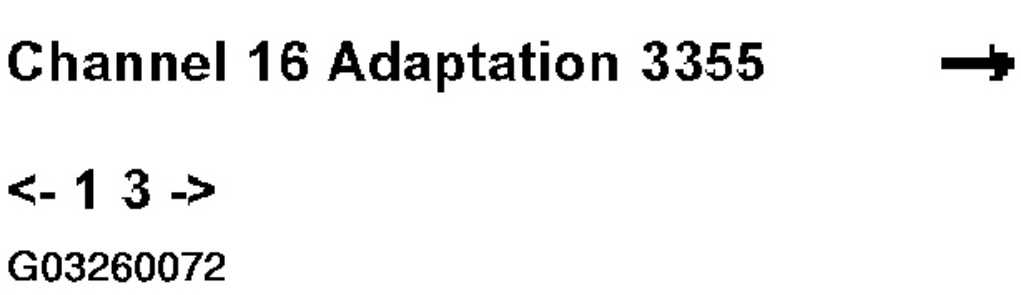


Fig. 173: VAG 1551 Scan Tool Display - Odometer Adaptation, From 10.00 Models (22 Of 26)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Press "C" button.

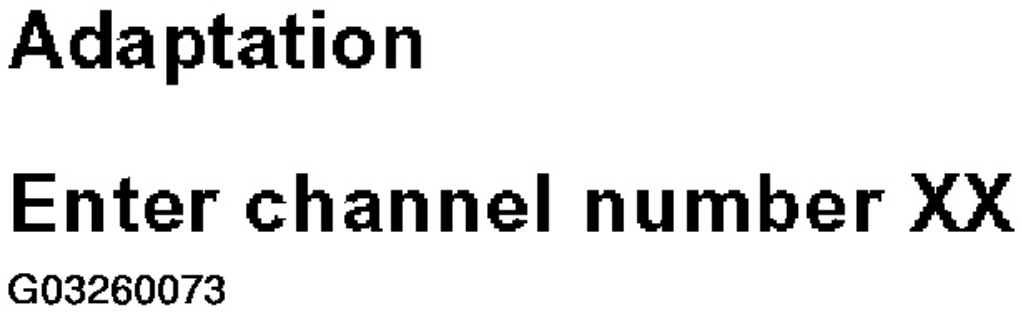


Fig. 174: VAG 1551 Scan Tool Display - Odometer Adaptation, From 10.00 Models (23 Of 26)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Press buttons -0- and -6- to select function 06 "End output".

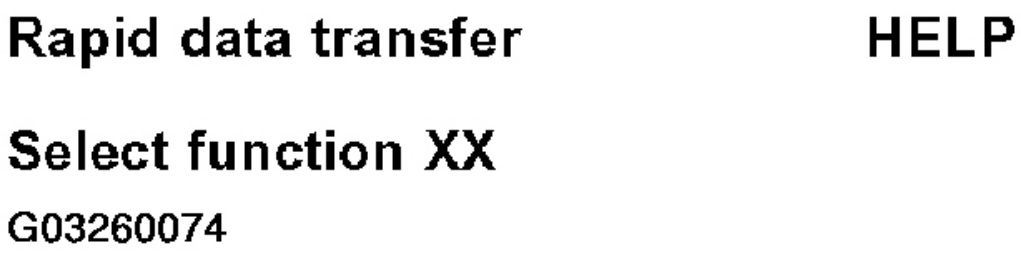


Fig. 175: VAG 1551 Scan Tool Display - Odometer Adaptation, From 10.00 Models (24 Of 26)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Press -Q- button to confirm input.

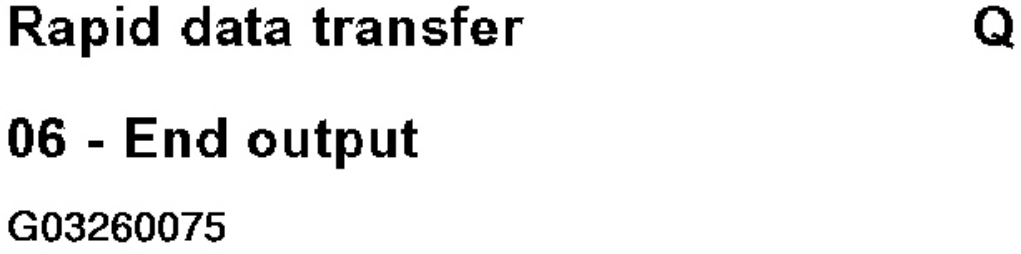


Fig. 176: VAG 1551 Scan Tool Display - Odometer Adaptation, From 10.00 Models (25 Of 26)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Switch off ignition.
- Disconnect VAG 1551/1552 Scan Tool (ST) from Data Link Connector (DLC).

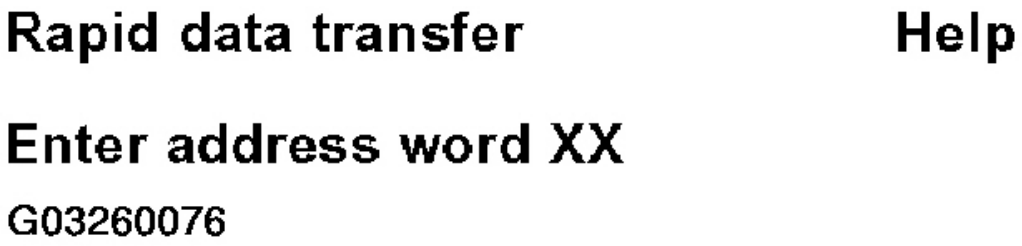


Fig. 177: VAG 1551 Scan Tool Display - Odometer Adaptation, From 10.00 Models (26 Of 26)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

FUEL GAUGE, CHECKING (ADAPTATION)

If the fuel gauge displays the contents of the fuel tank as being too high or too low, the fuel gauge needle position can be corrected (adapted).

- Perform Output Diagnostic Test Mode (DTM) for instrument cluster. See **OUTPUT DIAGNOSTIC TEST MODE (DTM), (FUNCTION 03)** .
- Check function of fuel gauge sender if Output Diagnostic Test Mode (DTM) does not indicate a malfunction.
- Check resistance value of fuel gauge sender in measuring value block. See **READ MEASURING VALUE BLOCK (FUNCTION 08)** .

If measuring value block does not indicate a short circuit or open circuit in the wiring or the fuel gauge sender, continue checks:

Special tools, testers, measuring units and auxiliary items required

- Fuel extraction unit VAG 1433 A (or local equivalent)
  - Switch off ignition.
  - Drain fuel tank completely (VAG 1433 A), then fill with 7 liters (1.84 gal) of fuel (ensure ignition is OFF).

Fig. 178: Identifying Fuel Extraction Unit VAG 1433 A (Or Local Equivalent)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

NOTE:

- **Wait a minimum of 1 minute before proceeding with adaptation in order to ensure a stable fuel level for adaptation purposes.**

WARNING:

- **Fire hazard. DO NOT smoke or work near heaters or have anything in the area that can ignite fuel.**
- **Always drain fuel from fuel tank using an approved fuel cart.**
- **Wear fuel-resistant gloves whenever working with open parts of the**

fuel system.

- Connect VAG 1551 Scan Tool (ST), select 1 "Rapid Data Transfer", switch on ignition, input address word 17 "Instrument cluster".

Indicated on display:

- Press -Q- button to confirm input.

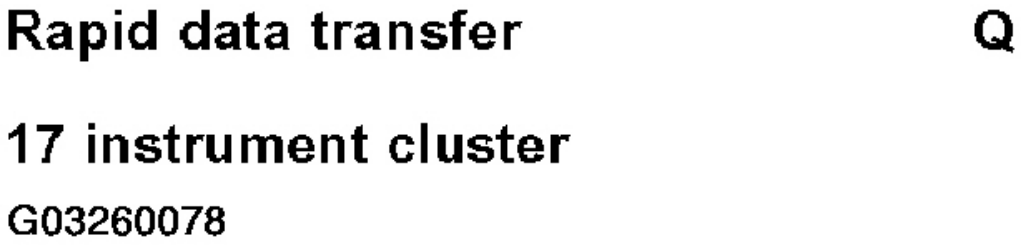


Fig. 179: VAG 1551 Scan Tool Display - Fuel Gauge Checking, From 10.00 Models (1 Of 15)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display (example only):

- Press -Q- button to confirm input.

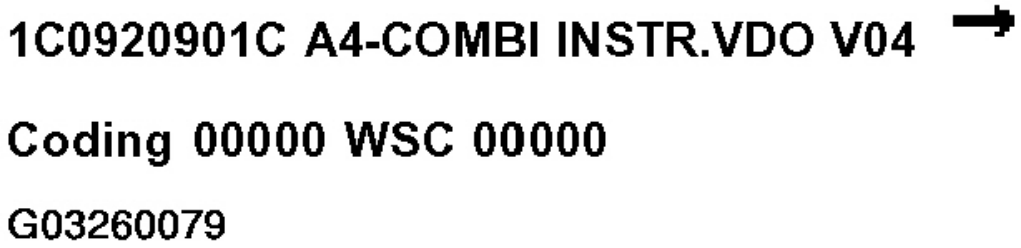


Fig. 180: VAG 1551 Scan Tool Display - Fuel Gauge Checking, From 10.00 Models (2 Of 15)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Press -Q- button to confirm input.

Fig. 181: VAG 1551 Scan Tool Display - Fuel Gauge Checking, From 10.00 Models (3 Of 15)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display (select function):

- Press buttons -1- and -0- to select function 10 "Adaptation".

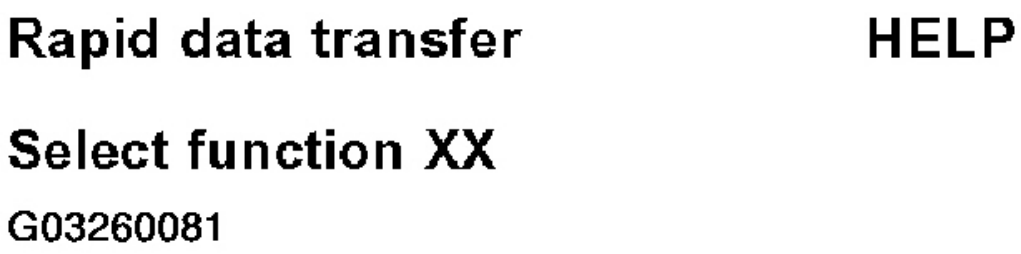


Fig. 182: VAG 1551 Scan Tool Display - Fuel Gauge Checking, From 10.00 Models (4 Of 15)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Press -Q- button to confirm input.

Fig. 183: VAG 1551 Scan Tool Display - Fuel Gauge Checking, From 10.00 Models (5 Of 15)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Press buttons -3- and -0- to select channel 30.

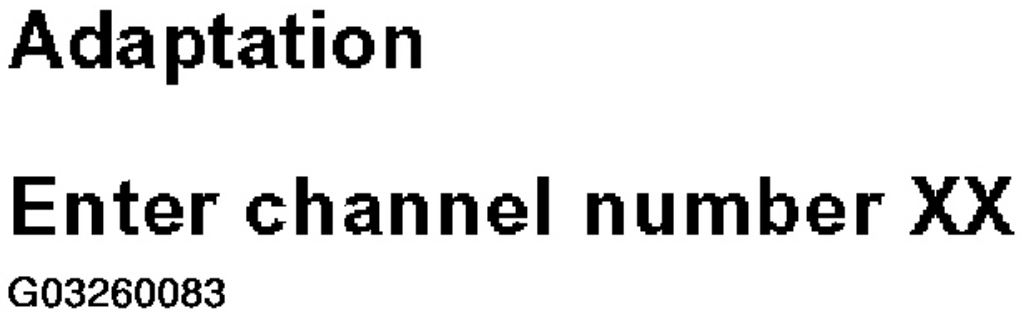


Fig. 184: VAG 1551 Scan Tool Display - Fuel Gauge Checking, From 10.00 Models (6 Of 15)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Press -Q- button to confirm input.

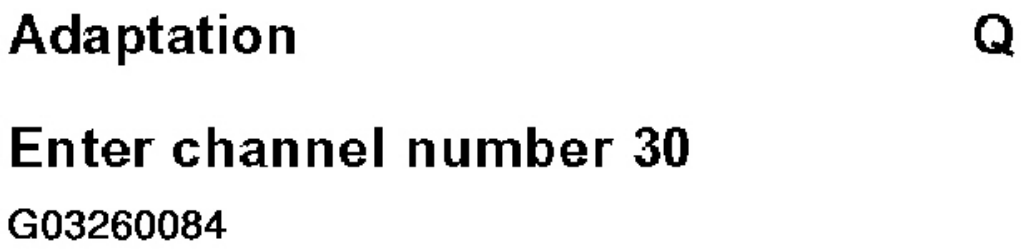


Fig. 185: VAG 1551 Scan Tool Display - Fuel Gauge Checking, From 10.00 Models (7 Of 15)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Use button 1 to decrease adaptation value down to 120
- Use button 3 to increase value up to 136, e.g. 130.

Fig. 186: VAG 1551 Scan Tool Display - Fuel Gauge Checking, From 10.00 Models (8 Of 15)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

- Indicated on display:

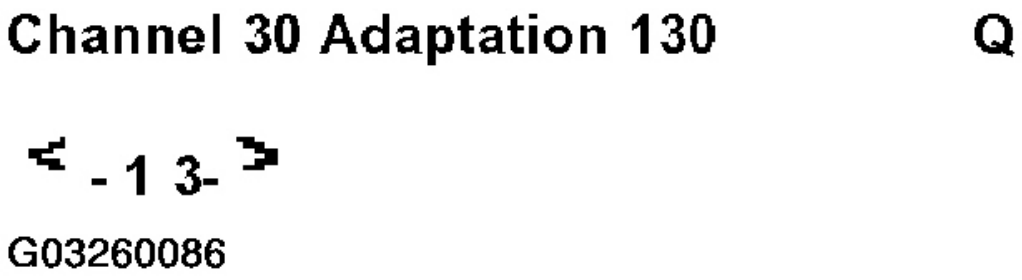


Fig. 187: VAG 1551 Scan Tool Display - Fuel Gauge Checking, From 10.00 Models (9 Of 15)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Adaptation is correct when the fuel gauge needle is positioned on the middle of the three red graduations (reserve) as illustrated.

When needle position is OK:

- Press -Q- button to confirm input.

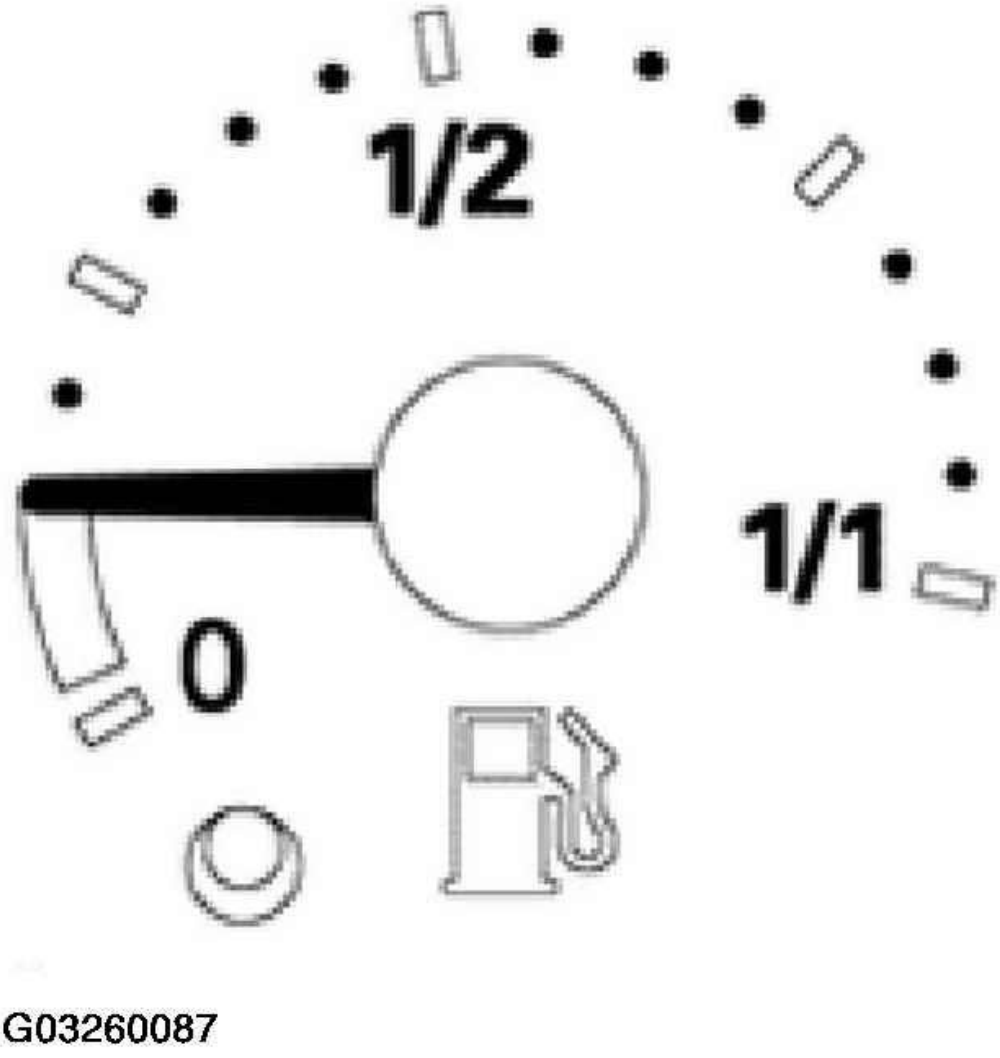


Fig. 188: VAG 1551 Scan Tool Display - Fuel Gauge Checking, From 10.00 Models (10 Of 15)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

- **Indicated on display (example only):**
- **Press -Q- button to confirm input .**

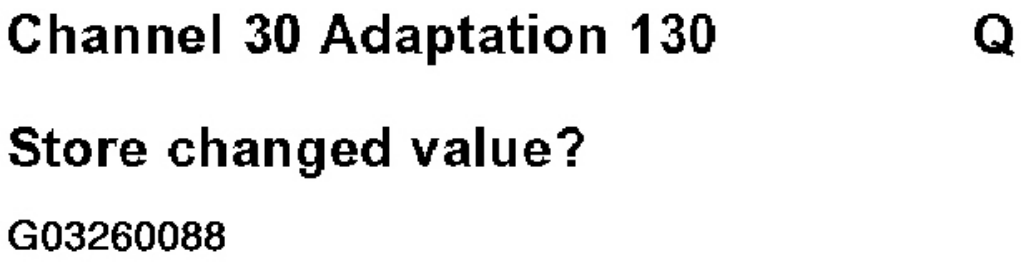


Fig. 189: VAG 1551 Scan Tool Display - Fuel Gauge Checking, From 10.00 Models (11 Of 15)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

- **Indicated on display:**
- **Press --> button to complete adaptation sequence** .

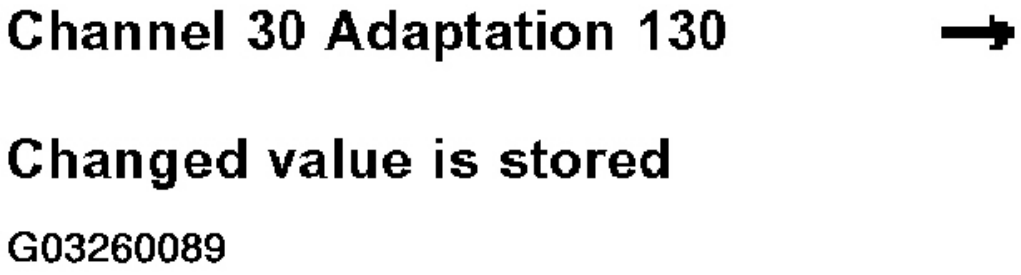


Fig. 190: VAG 1551 Scan Tool Display - Fuel Gauge Checking, From 10.00 Models (12 Of 15)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

NOTE: If fuel gauge cannot be adapted correctly, replace fuel gauge sender.

- Press buttons -0- and -6- to select function 06 "End output".

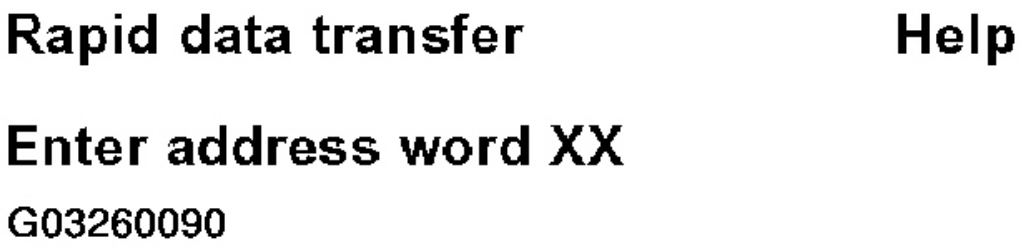


Fig. 191: VAG 1551 Scan Tool Display - Fuel Gauge Checking, From 10.00 Models (13 Of 15)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Press -Q- button to confirm input.

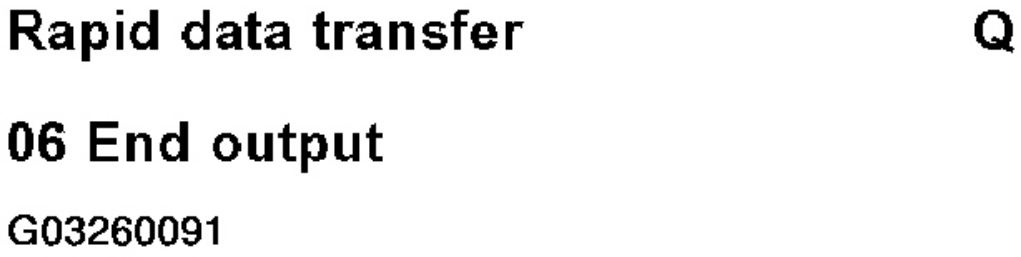


Fig. 192: VAG 1551 Scan Tool Display - Fuel Gauge Checking, From 10.00 Models (14 Of 15)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

The tester is now in basic function again.

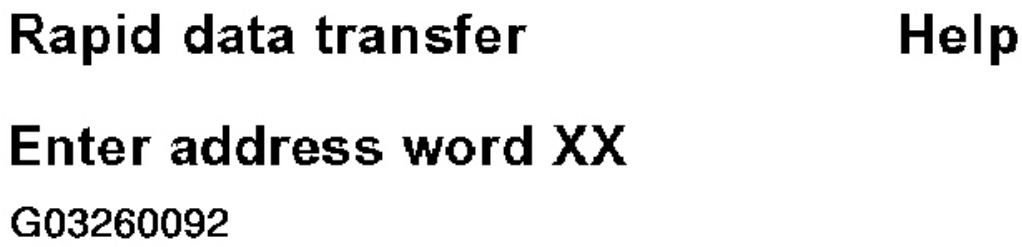


Fig. 193: VAG 1551 Scan Tool Display - Fuel Gauge Checking, From 10.00 Models (15 Of 15)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

DATA BUS ON BOARD DIAGNOSTIC INTERFACE -J533- "GATEWAY"

NOTE: Instrument clusters FROM 06.99 AND UP are integrated into the vehicle CAN Data Bus network (may also be known as "CAN-Bus" or "Data-Bus").

The Data Bus On Board Diagnostic Interface -J533- (which is integrated into the instrument cluster) enables data to be exchanged between the vehicle CAN Data-Bus network and the Data Link Connector (DLC) "K-wire".

The Data Bus On Board Diagnostic Interface -J533- has specific On Board Diagnostic (OBD) capabilities and requires a separate address word.

On replacement instrument clusters, the Data Bus On Board Diagnostic Interface -J533- must be coded according to vehicle market version and equipment level variables, See **DATA BUS ON BOARD DIAGNOSTIC INTERFACE -J533- UP TO 10.00 MODELS, CODING (FUNCTION 07)** .

Connect VAG 1551 Scan Tool (ST), select 1 "Rapid Data Transfer", switch on ignition.

Indicated on display:

- Press buttons -1- and -9- to select Gateway address word 19.

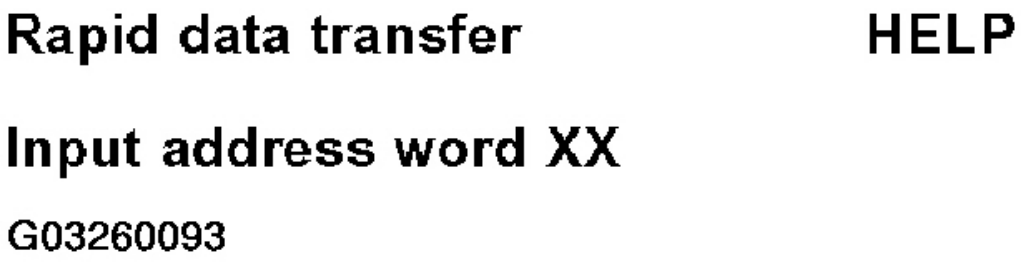


Fig. 194: VAG 1551 Scan Tool Display - Data Bus On Board Diagnostic Interface (1 Of 6)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Press -Q- button to confirm input.

Fig. 195: VAG 1551 Scan Tool Display - Data Bus On Board Diagnostic Interface (2 Of 6)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

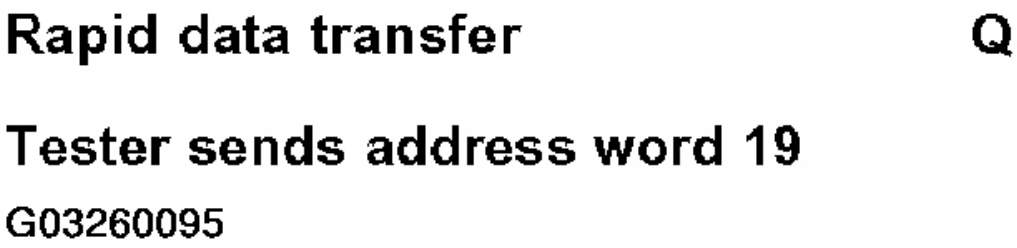


Fig. 196: VAG 1551 Scan Tool Display - Data Bus On Board Diagnostic Interface (3 Of 6)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display (example only):

Readout, top line

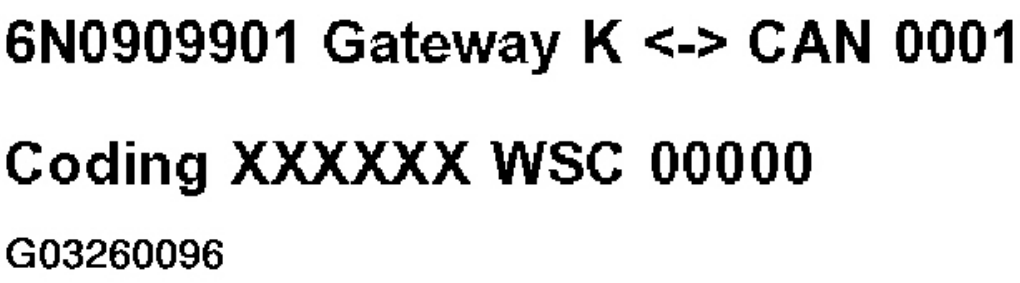


Fig. 197: VAG 1551 Scan Tool Display - Data Bus On Board Diagnostic Interface (4 Of 6)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

- 6N0 909 901 = Control module identification
- Gateway K <-> CAN = System designation (The Data Bus On Board Diagnostic Interface -J533- (which is integrated into the instrument cluster) is identified as "Gateway")
- 0001 = Software version

  Readout, bottom line

- Coding XXXXXX: Code dependent on engine version and optional equipment
- WSC 00000 = Workshop Code

- Press --> button.

Indicated on display (select function):

- List of available functions. See **LIST OF AVAILABLE FUNCTIONS (DATA BUS)** .

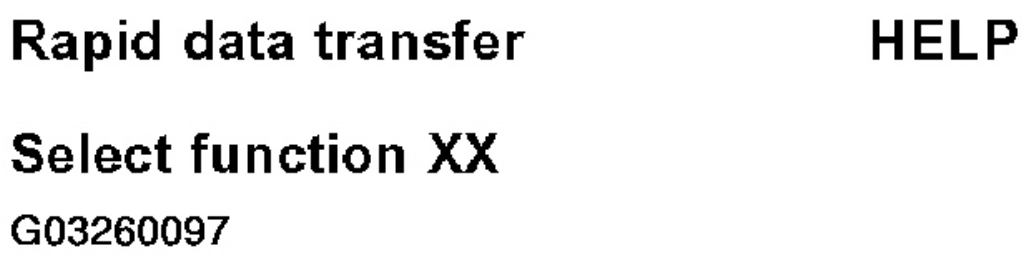


Fig. 198: VAG 1551 Scan Tool Display - Data Bus On Board Diagnostic Interface (5 Of 6)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

LIST OF AVAILABLE FUNCTIONS

LIST OF AVAILABLE FUNCTIONS (DATA BUS)

Function	Explanation	See
02 -	Check Diagnostic Trouble Code (DTC) memory	**DIAGNOSTIC TROUBLE CODE (DTC) MEMORY, CHECKING (FUNCTION 02)** .
05 -	Erase DTC memory	**DIAGNOSTIC TROUBLE CODE (DTC) MEMORY, ERASING (FUNCTION 05)**
06 -	End output	**END OUTPUT (FUNCTION 06)**
07 -	Code control module 10.00	**DATA BUS ON BOARD DIAGNOSTIC INTERFACE - J533- 10.00, CODING (FUNCTION 07)**
07 -	Code control module 10.00	**DATA BUS ON BOARD DIAGNOSTIC INTERFACE J533- 10.00, CODING (FUNCTION 07)**
08 -	Read measuring value block	**READ MEASURING VALUE BLOCK (FUNCTION 08)**

NOTE:

- **Press the HELP button to print out a complete list of available functions. This list indicates the function capability of the VAG 1551 Scan Tool (ST) only, and does not necessarily reflect the function capability of vehicle systems equipped with OBD. For address word 19, do not attempt to select functions other than those listed above.**
- **After the function is completed and forwarded with the --> button, the VAG 1551 Scan Tool (ST) returns to the following start position:**

Indicated on display:

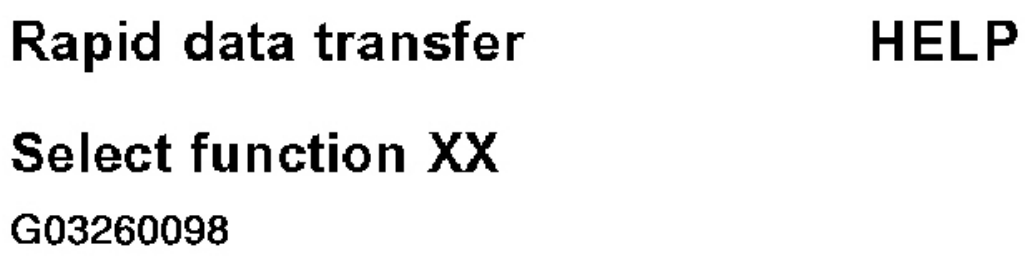


Fig. 199: VAG 1551 Scan Tool Display - Data Bus On Board Diagnostic Interface, From 06.99 And Up (6 Of 6)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

DIAGNOSTIC TROUBLE CODE (DTC) MEMORY, CHECKING (FUNCTION 02)

NOTE:

- **DTCs stored in memory along with corresponding malfunction descriptions can only be displayed by initiating the On Board Diagnostic program and checking DTC memory (function 02)**
- **Displayed DTC information is not constantly updated. Information can only be displayed information by initiating the On Board Diagnostic program and checking DTC memory (function 02) or with function 05 "Erase DTC memory".**

- Switch on printer with Print button (indicator lamp in key lights up).

Indicated on display (select function):

- Press buttons -0- and -2- to select function 02 "Check Diagnostic Trouble Code (DTC) memory".

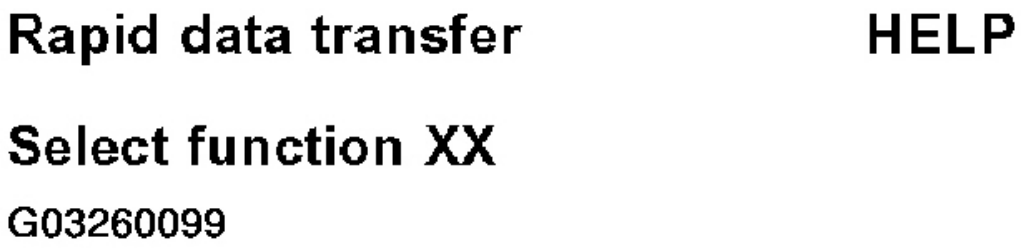


Fig. 200: VAG 1551 Scan Tool Display - Diagnostic Trouble Code Memory Checking (1 Of 5)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Press -Q- button to confirm input.

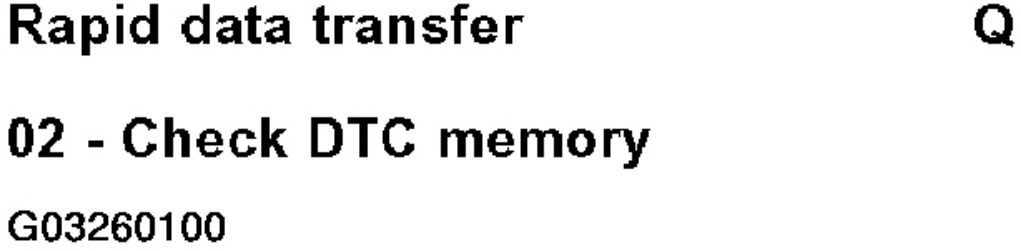


Fig. 201: VAG 1551 Scan Tool Display - Diagnostic Trouble Code Memory Checking (2 Of 5)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

The number of stored malfunctions appear in the display.

The number of stored DTCs or "No DTC s recognized" appears in the display and are printed out one after another.

- When the last DTC has been displayed and printed out, rectify malfunctions as described in DTC table. See **Diagnostic Trouble Code (DTC) table** .

Fig. 202: VAG 1551 Scan Tool Display - Diagnostic Trouble Code Memory Checking (3 Of 5)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

If "No DTC recognized" is displayed, the program will return to the initial position after pressing --> button.

Fig. 203: VAG 1551 Scan Tool Display - Diagnostic Trouble Code Memory Checking (4 Of 5)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display (select function):

If display not indicated as shown:

See *Scan tool operating instructions*

- End output (function 06). See **END OUTPUT (FUNCTION 06)** .
- Switch off ignition and disconnect Data Link Connector (DLC).

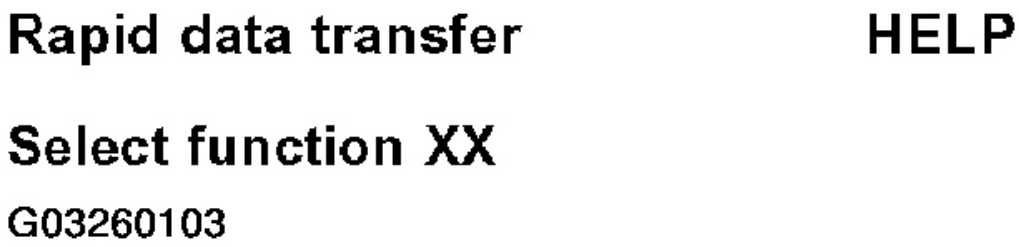


Fig. 204: VAG 1551 Scan Tool Display - Diagnostic Trouble Code Memory Checking (5 Of 5)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

DIAGNOSTIC TROUBLE CODE (DTC) TABLE

NOTE:

- **The following table lists all malfunctions, with the corresponding 5 digit code numbers, that can be recognized by control module with indicator unit in instrument cluster insert -J285- and printed out by the VAG 1551 Scan Tool (ST).**
- **If malfunctions do not occur regularly, these are displayed as occurring sporadically ("SP").**
- **DTC codes appears only on print-out.**
- **Before replacing components, check the wiring and connections to these components as well as ground connections, according to wiring diagram.**
- **When repair has been carried out, the Diagnostic Trouble Code (DTC) memory must always be erased and checked again with VAG 1551 Scan Tool (ST).**
- **If there is a specific complaint and no malfunctions are recognized after checking Diagnostic Trouble Code (DTC) memory, carry out function 03, OUTPUT DIAGNOSTIC TEST MODE (DTM), (FUNCTION 03) or function 08, READ MEASURING VALUE BLOCK (FUNCTION 08) .**

DIAGNOSTIC TROUBLE CODE

VAG 1551 print out	Possible cause	Possible effects	Corrective Action
01044 Control module incorrectly coded	• A control module connected to vehicle CAN Data Bus network is incorrectly coded • A control module connected to vehicle CAN	Driveability problems (shift pressure, load shift impact) Dynamic driving regulation	• Check DTC memory of all control modules connected to vehicle CAN Data Bus, troubleshoot and repair as necessary. • Confirm correct coding of all

	Data Bus network is malfunctioning	inoperative	control modules coding connected to vehicle CAN Data Bus. • Replace control module.

DIAGNOSTIC TROUBLE CODE

VAG 1551 print out	Possible cause	Possible effects	Corrective Action
01312 Data Bus Drive • Faulty	• Fault in CAN Data Bus Wiring • Data Bus Drive in Bus-Off condition	Driveability problems (shift pressure, load shift impact) Dynamic driving regulation inoperative	• Read measuring value block, function 08, See **READ MEASURING VALUE BLOCK (FUNCTION 08)** • Check DTC memory of all control modules connected to vehicle CAN Data Bus, troubleshoot and repair as necessary • Confirm correct coding of all control modules coding connected to vehicle CAN Data Bus. • Check CAN Data Bus wiring using wiring diagram

DIAGNOSTIC TROUBLE CODE (DTC) MEMORY, ERASING (FUNCTION 05)

NOTE: Erasing DTC memory (function 05) is only possible after checking DTC memory (function 02). If DTC memory cannot be erased, check DTC memory again and rectify indicated malfunctions.

Prerequisites

- Check DTC memory. See **DIAGNOSTIC TROUBLE CODE (DTC) MEMORY, CHECKING (FUNCTION 02)** .
- All malfunctions repaired.

After checking DTC memory:

Indicated on display (select function):

- Press buttons -0- and -5- to select function 05, "Erase DTC memory."

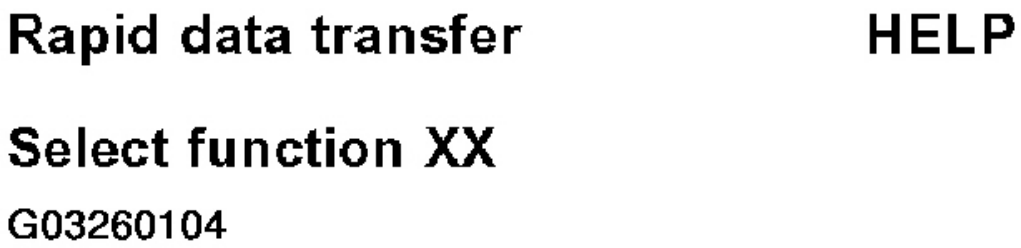


Fig. 205: VAG 1551 Scan Tool Display - Diagnostic Trouble Code (DTC) Memory Erasing, From 06.99 And Up (1 Of 6)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Press -Q- button to confirm input.

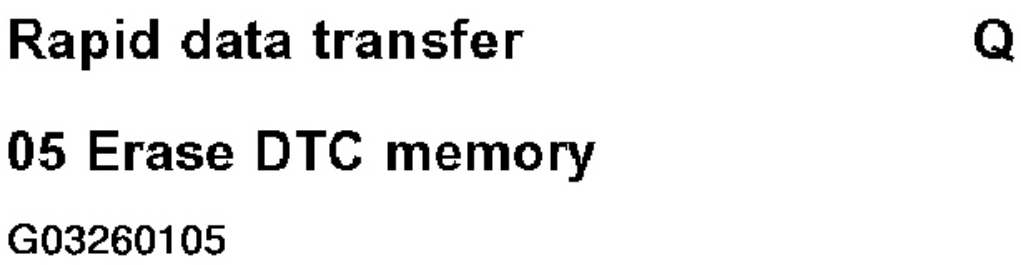


Fig. 206: VAG 1551 Scan Tool Display - Diagnostic Trouble Code (DTC) Memory Erasing, From 06.99 And Up (2 Of 6)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display (DTC memory is now erased).

- Press --> button.

Fig. 207: VAG 1551 Scan Tool Display - Diagnostic Trouble Code (DTC) Memory Erasing, From 06.99 And Up (3 Of 6)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display (select function):

- End output (function 06). See **END OUTPUT (FUNCTION 06)** .

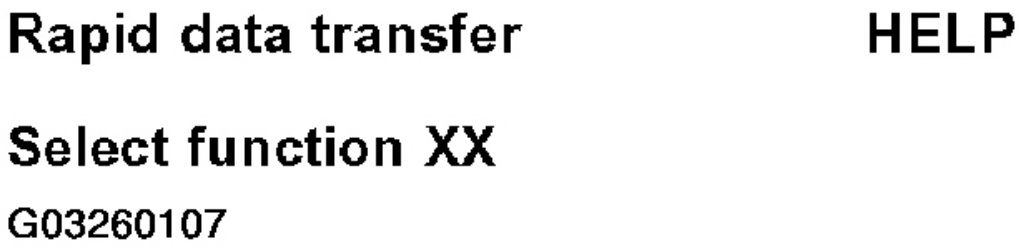


Fig. 208: VAG 1551 Scan Tool Display - Diagnostic Trouble Code (DTC) Memory Erasing, From 06.99 And Up (4 Of 6)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

NOTE:

- **If this appears in the display, test sequence is faulty.**

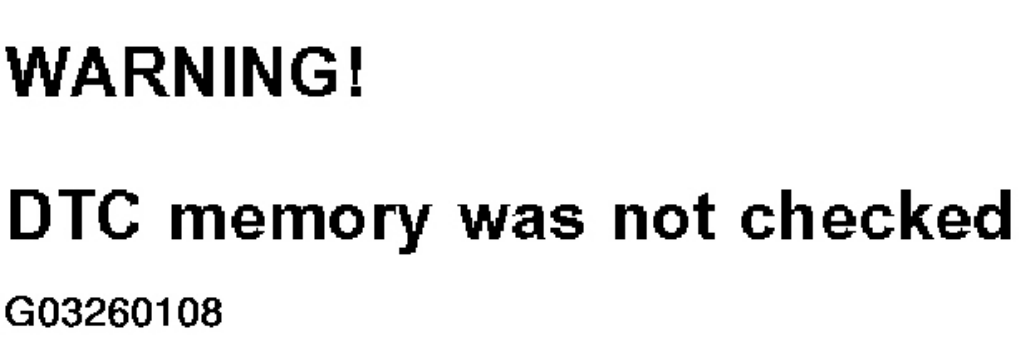


Fig. 209: VAG 1551 Scan Tool Display - Diagnostic Trouble Code (DTC) Memory Erasing, From 06.99 And Up (5 Of 6)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

- **If this appears in the display, test sequence is faulty.**

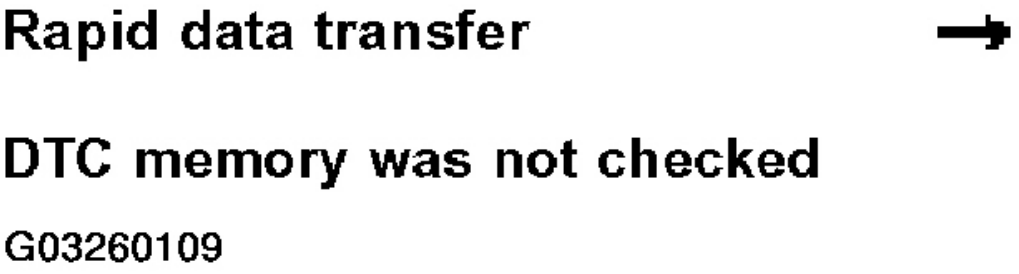


Fig. 210: VAG 1551 Scan Tool Display - Diagnostic Trouble Code (DTC) Memory Erasing, From 06.99 And Up (6 Of 6)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Adhere exactly to test sequence: First check DTC memory, repair malfunctions if necessary, then erase.

END OUTPUT (FUNCTION 06)

- Press buttons -0- and -6- to select function "End output."

Indicated on display:

- Press -Q- button to confirm input.

Fig. 211: VAG 1551 Scan Tool Display - End Output, From 06.99 And Up (1 Of 2)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Switch off ignition.
- Disconnect VAG 1551 Scan Tool (ST) from Data Link Connector (DLC)

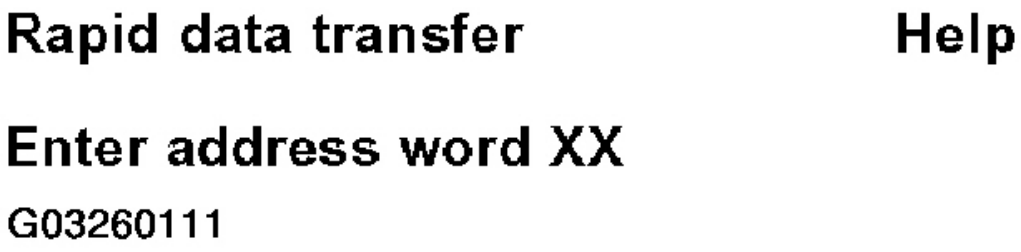


Fig. 212: VAG 1551 Scan Tool Display - End Output, From 06.99 And Up (2 Of 2)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

DATA BUS ON BOARD DIAGNOSTIC INTERFACE -J533- UP TO 10.00 MODELS, CODING (FUNCTION 07)

- Connect VAG 1551 Scan Tool (ST), input address word 19 "Gateway" and then press --> button until

"Select function XX" is shown in display.

- Press buttons -0- and -7- to select function "Code control module".

Indicated on display:

- Press -Q- button to confirm input.

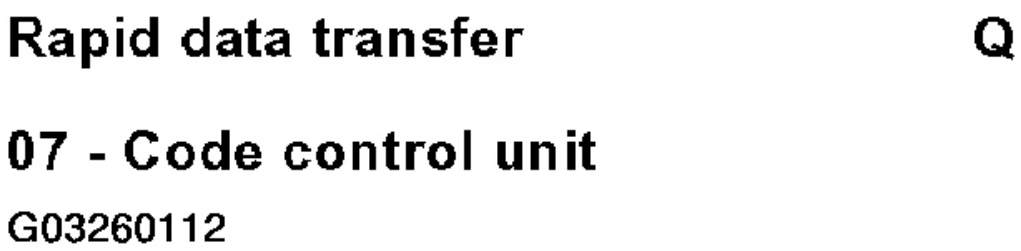


Fig. 213: VAG 1551 Scan Tool Display - Data Bus On Board Diagnostic Interface, Up To 10.00 Models (1 Of 4)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Enter code number compiled from code table

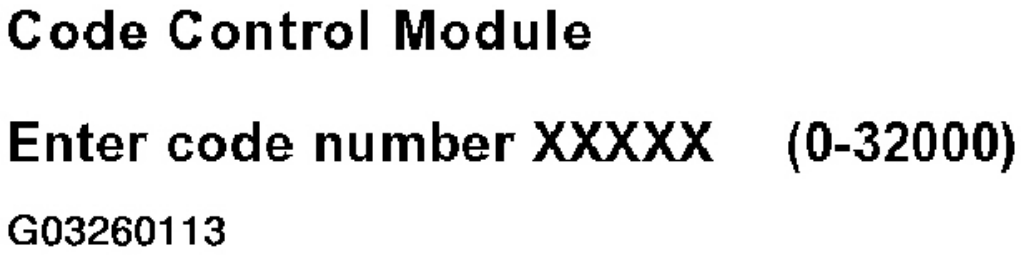


Fig. 214: VAG 1551 Scan Tool Display - Data Bus On Board Diagnostic Interface, Up To 10.00 Models (2 Of 4)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

COMPONENTS AND CODE NUMBER (UP TO 10.00 MODELS)

Control modules to power-train databus	Code
Transmission Control Module (TCM)	00001
ABS Control Module	00002
Airbag Control Module	00004

To determine code number, add applicable control module code numbers together.

Example:

Airbag + ABS + TCM

00004 + 00002 + 00001 = 00007

Indicated on display (example):

- Press -Q- button to confirm input.

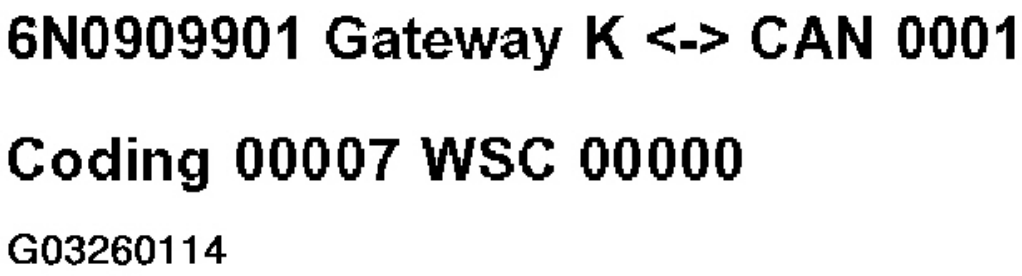


Fig. 215: VAG 1551 Scan Tool Display - Data Bus On Board Diagnostic Interface, Up To 10.00 Models (3 Of 4)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display (select function):

- Press buttons -0- and -6- to select function 06 "End output".

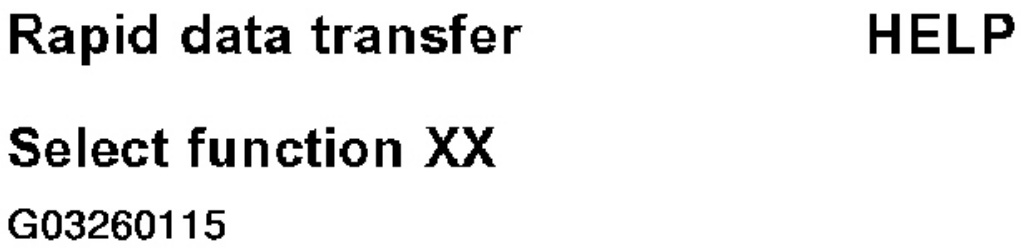


Fig. 216: VAG 1551 Scan Tool Display - Data Bus On Board Diagnostic Interface, Up To 10.00 Models (4 Of 4)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

The scan tool is again in basic function.

DATA BUS ON BOARD DIAGNOSTIC INTERFACE J533- FROM 10.00 MODELS, CODING (FUNCTION 07)

- Connect VAG 1551 Scan tool (ST), input address word 19 "Gateway" and then press button until "Select function XX" is shown in display.
- Press buttons -0- and -7- to select function "Code control module".

Indicate on display:

- Press -Q- button to confirm input.

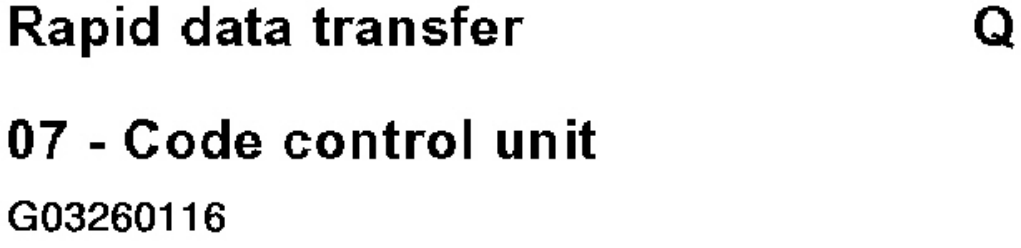


Fig. 217: VAG 1551 Scan Tool Display - Data Bus On Board Diagnostic Interface J533- From 10.00 Models (1 Of 2)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Coding

Indicate on display:

- Enter code number compiled from code table.

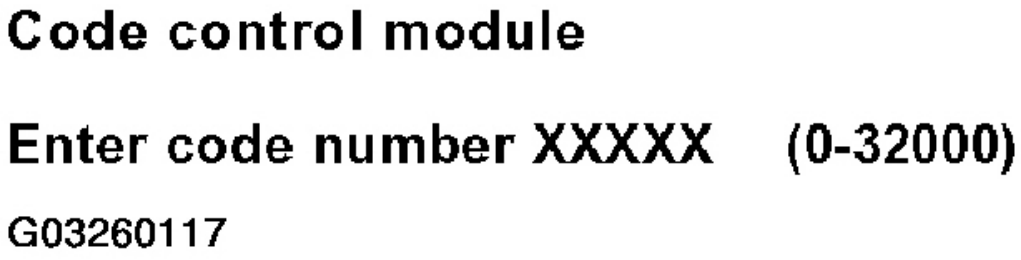


Fig. 218: VAG 1551 Scan Tool Display - Data Bus On Board Diagnostic Interface J533- From 10.00 Models (2 Of 2)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

COMPONENTS AND CODE NUMBER (FROM 10.00 MODELS)

Control modules to power-train databus	Code
ABS activated	00002
Airbag activated	00004
ABS and Airbag activated	00006

NOTE: Transmission control module message is not codified because it is automatically learned.

READ MEASURING VALUE BLOCK (FUNCTION 08)

The measuring value block is divided into 4 display group numbers. Each display group contains individual display fields, See **DISPLAY GROUPS, INTERPRETING** .

Use this function to observe various instrument cluster inputs.

- Connect VAG 1551 Scan Tool (ST), input address word 19 "Gateway" and then press --> button until "Select function XX" is shown in display

Indicated on display:

- Press buttons -0- and -8- to select function "Read measuring value block".

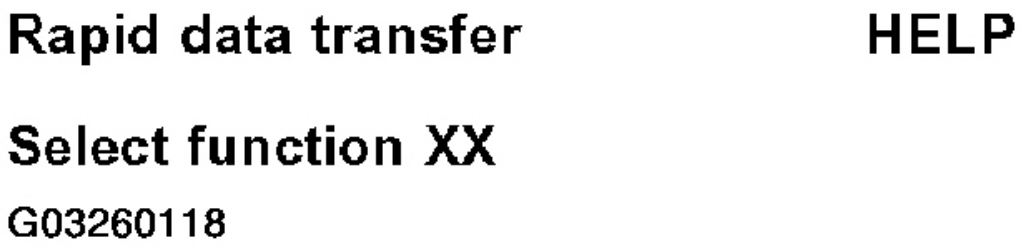


Fig. 219: VAG 1551 Scan Tool Display - Read Measuring Value Block (1 Of 5)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Press -Q- button to confirm input.

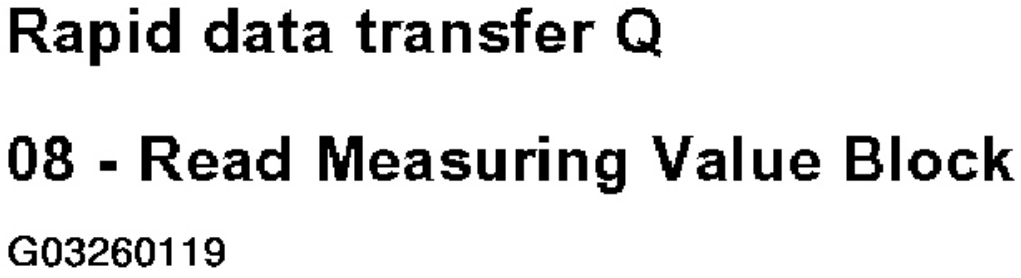


Fig. 220: VAG 1551 Scan Tool Display - Read Measuring Value Block (2 Of 5)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display:

- Using the Scan Tool (ST) button pad, enter the required display group number (following example shows display group 001).
- Press -Q- button to confirm input.

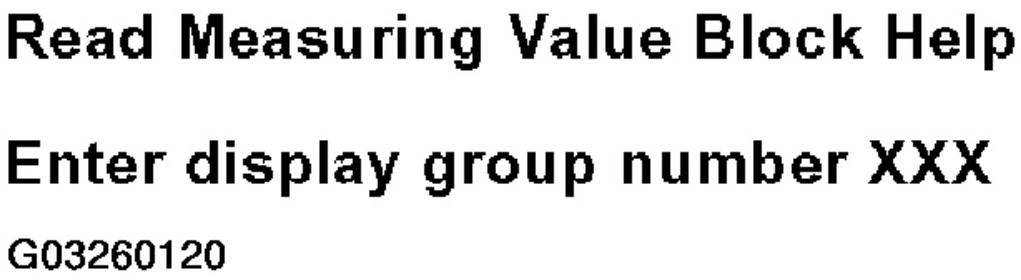


Fig. 221: VAG 1551 Scan Tool Display - Read Measuring Value Block (3 Of 5)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

Indicated on display: (1...4 - Display fields)

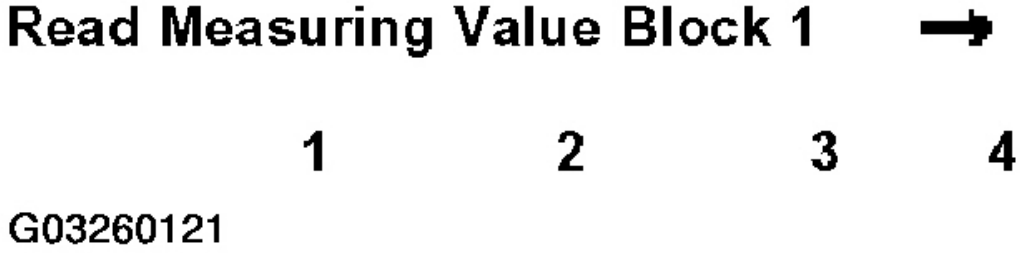


Fig. 222: VAG 1551 Scan Tool Display - Read Measuring Value Block (4 Of 5)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

NOTE: Interpreting display groups and evaluating measured values in individual display fields. See DISPLAY GROUPS, INTERPRETING .
With the printer switched on, the information on the display is printed out. To easily change between display groups, proceed as follows:

DISPLAY GROUP VAG 1551 AND 1552 CHART

Display group	VAG1551	VAG 1552
Higher	Press button 3	Press --> button
Lower	Press button 1	Press --> button
Skip	Press button C	Press button C

- Displayed after pressing -C- button.

Indicated on display:

- Enter alternate display group number as needed, See tables beginning. See **DISPLAY GROUPS, INTERPRETING** .

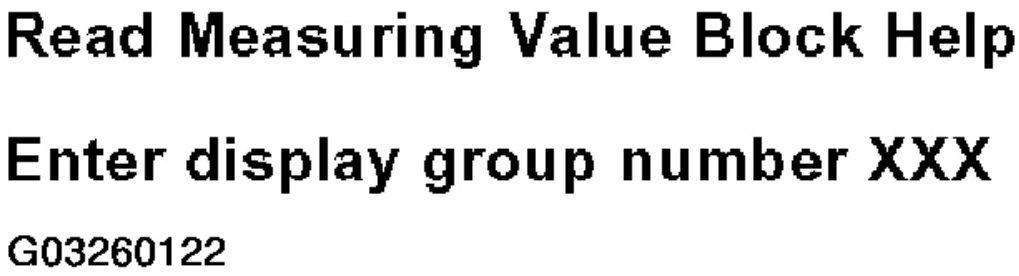


Fig. 223: VAG 1551 Scan Tool Display - Read Measuring Value Block (5 Of 5)
Courtesy of VOLKSWAGEN OF AMERICA, INC.

NOTE:

- **Display fields always show actual values transmitted from senders and sensors. However, instrument cluster display values can differ from those in the display fields due to internal filtering.**
- **Other display groups are possible, but are not required for On Board Diagnostic program!**

The condition of the databus function for control modules which are connected to the power-train databus is displayed in display groups 125 and 126.

The display fields for control modules which are not installed remain empty.

DISPLAY GROUPS, INTERPRETING

Display group 125

NOTE:

- **Display fields in display groups 125 and 126 provide the CAN Data Bus function status codes of various control modules connected to the vehicle CAN Data Bus network.**
- **If a vehicle is not equipped with control module(s) or components listed in the following display groups, the applicable display field remains blank.**

- **Display fields may vary depending on instrument cluster manufacturer (VDO or MMO).**

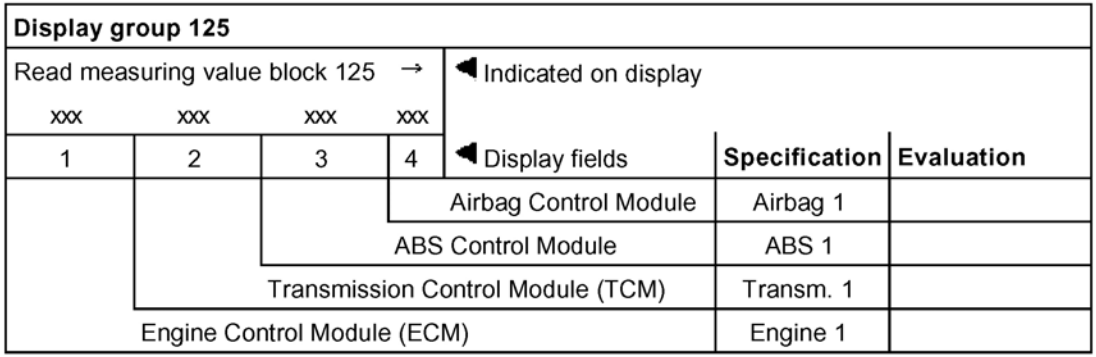


Fig. 224: Display Group 125
Courtesy of VOLKSWAGEN OF AMERICA, INC.

NOTE: For evaluation of Fig. 224 , see Evaluating display group number 125 .

Evaluating display group number 125

EVALUATING DISPLAY GROUP NUMBER 125

Display field	Description	Display	Corrective actions
1	Engine Control Module (ECM) -J220-	Engine 1 = OK Data transfer from ECM over CAN Data Bus network OK Engine 0 = Not OK No data transfer from Engine Control Module (ECM) over CAN Data Bus network	No data transfer from CM over CAN Data Bus network (code 0): • Check wiring and connections for CAN Data Bus to applicable control module using wiring diagram
2	Transmission Control Module (TCM) -J217-	Transm. 1 = OK Data transfer from TCM over CAN Data Bus network OK Transm. 0 = not OK No data transfer from TCM over CAN Data Bus network	
3	ABS Control Module -J213-	ABS 1 = OK Data transfer from ABS control module over CAN	No data transfer from CM over CAN Data Bus network (code 0):

		Data Bus network OK ABS 0 = not OK No data transfer from ABS control module over CAN Data Bus network	• Check wiring and connections for CAN Data Bus to applicable control module using wiring diagram
4	Airbag Control Module -J234-	Airbag 1 = OK Data transfer from airbag control module over CAN Data Bus network OK Airbag 0 = not OK, No data transfer from airbag control module over CAN Data Bus network	

Display group 126

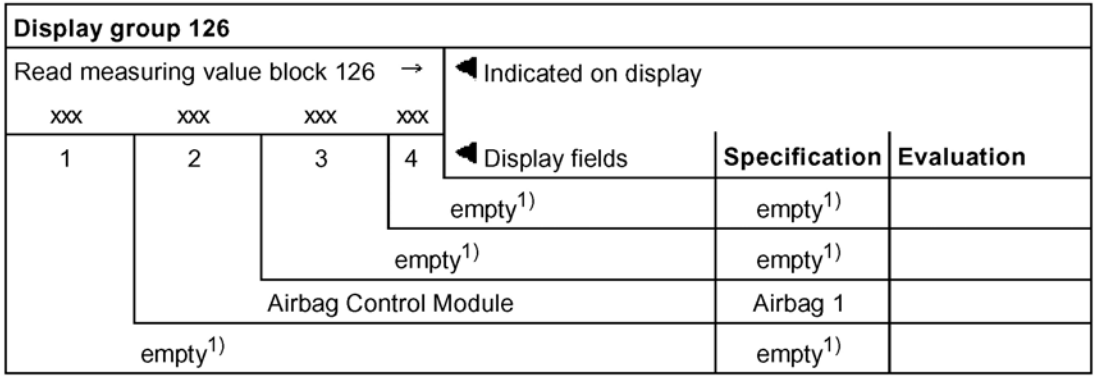


Fig. 225: Display Group 126
Courtesy of VOLKSWAGEN OF AMERICA, INC.

NOTE: For evaluation of Fig. 225 , see Evaluating display group number 126 .

Evaluating display group number 126

EVALUATING DISPLAY GROUP NUMBER 126

Display field	Description	Display	Corrective actions
2	Airbag control module -J234-	Airbag 1 = OK Data transfer from airbag control module over CAN Data Bus network OK Airbag 0 = not OK	No data transfer from sensor or control module over CAN Data Bus network (code 0): • Check wiring and connections for

		No data transfer from airbag control module over CAN Data Bus network	CAN Data Bus to airbag control module using wiring diagram

ANTI-THEFT IMMOBILIZER, ON BOARD DIAGNOSTIC (OBD)

GENERAL INFORMATION

NOTE: All anti-theft immobilizer OBD program functions must be performed using the VAS 5051 Vehicle Diagnostic Testing and Information System in operating mode "Guided Fault Finding" or "Vehicle Self-Diagnosis".

Anti-theft immobilizer system/component description and repairs: See **ANTI-THEFT IMMOBILIZER** .